

The Content, Construct, and Criterion-Related Validity of Leader Behavior Measures

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13. ABSTRACT (Maximum 200 words) This report is the second in a series on methods and results of a longitudinal study of leadership and its development on a sample of candidate officers presently enrolled in a military college. Included in the report are results from the first set of comprehensive assessments, which examined the content, construct, and criterion-related validity of leadership measures. Data were collected using a multi-source/multi-method approach from the entering class of 1991 at Virginia Military Institute. Methods of data collection included interviews, structured observations, surveys of management and leadership behaviors, and leadership logs (critical incidents). Sources of leadership information included superiors, peers, self, and subordinates. Convergence across both methods and sources on the leadership behaviors displayed by subjects was found. Data on leadership thus far collected provide a reliable and valid baseline for future research, and support the content, construct, and criterion-related validity of the leadership measures used.			
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FOREWORD

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has had from the late 1940's a continuing interest in leadership research.

This report describes second-year results from a longitudinal study of leadership emergence, development, and effectiveness being conducted at the Virginia Military Institute (VMI). The report focuses on the content, construct, and criterion-related validity of leadership measures.

Further research will lead to measurement methods and leadership models that are potentially applicable in military and non-military settings.

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THE CONTENT, CONSTRUCT, AND CRITERION-RELATED VALIDITY OF LEADER BEHAVIOR MEASURES

EXECUTIVE SUMMARY

Requirement:

To enhance military preparedness and effectiveness, a better understanding of the development of leadership is imperative. A thorough understanding of the developmental process is the essential blueprint for more effective leadership selection and training programs. This project investigates the emergence and development of leadership with an emphasis upon transformational leadership behavior. In addition to transformational leadership, the full leadership model or framework includes managerial decision styles, initiating structure/consideration, and contingent and noncontingent punishment. The purpose of this research report is to assess the content, construct, and criterion-related validity of the leadership measures being used to investigate leadership development.

Procedure:

Data were collected on site at the Virginia Military Institute (VMI). A multi-source/multi-method approach was implemented during the second year of the study to measure leadership and its development in cadets who entered VMI in 1991 (the focal group). Methods of data collection included structured observations, surveys of management and leadership behaviors, and leadership logs (critical incidents). Validity was assessed by (1) comparing data obtained with theoretical predictions and previous research; (2) determining linkages among leadership constructs; (3) relating data obtained using different methods and from different sources; and (4) measuring relationships between leadership constructs and criterion measures.

Findings:

Patterns of relationships among leadership constructs were generally consistent with prior research and theory. Modest convergence across both methods and across sources on the leadership behavior displayed by cadets was found. Convergent validity was seen in the extent to which multiple ratings and coded critical incidents tended to be correlated in ways supporting each of the postulated styles of

transactional and transformational leadership. Survey ratings of leadership provided by upper class cadets significantly predicted peer rankings of focal cadet effectiveness and the attainment of the rank of corporal in the cadet rank structure. Based on leadership surveys and critical incidents, leaders judged to exhibit the most and least transformational leadership behaviors were tentatively identified. Data on leadership thus far collected have provided a reliable and valid baseline for the assessment of leadership development and effectiveness during the third year of the study.

Utilization of Findings:

A considerable amount of information has been collected during the first two years of this investigation. This information will be used to (1) identify changes in leadership behavior during the third year of the study; (2) develop profiles of effective and ineffective leaders; and (3) describe individual and experiential factors that predict leader development, performance, and effectiveness. The measurement methods used and the model developed in this study are potentially applicable to other military and non-military settings.

THE CONTENT, CONSTRUCT, AND CRITERION-RELATED VALIDITY OF LEADER BEHAVIOR MEASURES

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THE CONTENT, CONSTRUCT, AND CRITERION-RELATED VALIDITY OF LEADER BEHAVIOR MEASURES

INTRODUCTION

We have undertaken a longitudinal study of leadership development and emergence among student (cadet) leaders at a military college. Essential to this effort is the development of valid and reliable measures of leader behavior.

Longitudinal studies of leadership development and emergence are exceedingly rare even though hundreds of studies of leadership have been completed over the past 50 years. Much has been learned about the ways in which leaders differ from non-leaders and about the factors that influence a leader's effectiveness (Bass, 1990). This report addresses a crucial issue--the validity of leadership measures being employed in this longitudinal study of leadership among cadets at the Virginia Military Institute (VMI).

This is the second in a series of reports dealing with this longitudinal leadership study. The first report provided an overview and critique of leadership models, and described the steps taken toward the development of the content and construct-valid measurement approach used in the second year of the study (Lau, Atwater, Avolio, & Bass, 1993). The first report concluded that transactional and transformational leadership behaviors needed to be supplemented with components from earlier leadership models. It was also emphasized that a multi-method/multi-rater approach was the optimal way to study leadership constructs for which there are no "objective" measures, i.e., perceptions and interpretations need to be used in identifying and assessing the construct.

Summary of the Larger Longitudinal Investigation

The population under study is the VMI class scheduled to graduate in 1995. This class of cadets entered VMI in August of 1991. This report follows them through the completion of their second year. This class of cadets will be referred to throughout this report, and throughout the longitudinal study, as focal cadets.

Our intention is to intensively study the focal cadets as they develop throughout their four years at VMI. Individual differences in ability, personality, temperament and biographical characteristics/experiences are being measured to facilitate the identification of those cadets who eventually emerge as cadet leaders at VMI. In addition, we have collected an extensive range of experiential data on each cadet that may potentially affect his behavior, emergence and effectiveness as a leader as he progresses from freshman to senior. We have developed a comprehensive multi-source/multi-method strategy to measure the leadership behaviors displayed by focal cadets.

Purpose of This Report

In this longitudinal study, our purpose is to investigate the emergence and development of leadership with an emphasis on transformational leadership (see Bass, 1985). In order to do this, we need to be able to measure leadership, to distinguish transformational leaders from those who are not transformational, and to identify the types of behaviors in which transformational leaders engage. A framework of relevant leadership constructs and a multi-source/multi-method strategy for collecting leadership behavior data was employed. The initial work on validation of this framework and our methods are described in this report.

This report focuses on the strategy undertaken over a two-year period, to reliably and validly measure leadership behavior as displayed by cadets at VMI. This report details the range of measures, methods and sources that have been developed to provide an accurate and reliable assessment of cadet leadership behavior.

This report first summarizes the comprehensive framework of leadership and its behavioral components as well as the content validity of the leadership measures (see Lau et al., 1993). The major purpose of the present report is to present results from the first set of comprehensive assessments conducted as part of the longitudinal study, examining the construct and criterion-related validity of the leadership measures. We also present a tentative strategy and supporting data for identifying transformational leaders and examine the types of behaviors transformational leaders demonstrate in their early stages of development. In the last section, we present our conclusions concerning the measures that will be used to assess leadership development over the next two years at VMI.

Types of Validity

The most comprehensive classification of validity was first prepared jointly by the American Psychological Association, the American Educational Research Association and the National Council on Measurements Used in Education (Kerlinger, 1986, p. 417). Three types of validity were discussed: content, construct, and criterion-related. Each, in turn, includes a class of validation methods and/or processes. Content validity assesses the representativeness of measures of leadership. Construct validity is both a logical and an empirical process which assesses whether measures are related to theoretical constructs. For example, in order to have construct validity, there must be some convergence of leadership measures from different measurement techniques. Criterion-related validity assesses whether or not leadership measures predict or relate to external criteria.

Since their inception, these three types of validity were often described as being distinctly different, although recent discussions suggest they are different methods for

accomplishing the same global purpose (Lawshe, 1985; Saal & Knight, 1988). In each case one wants to infer that the measures are tapping some construct, that they measure what they are supposed to measure, and that they can be used to predict future behavior and/or performance.

The leadership behavior measures being used in the current study are discussed in terms of each of the three types of validity. Since multiple methods and sources are also being used to assess leadership, the convergent and discriminant validity of the multi-source/multi-method data are also discussed as part of the construct validation strategy.

The Leadership Context

VMI is a four-year, all male military college offering undergraduate degrees in engineering, liberal arts, and the sciences. A dominant structure of VMI is the Cadet Corps, which comprises the entire student population of approximately 1300. The educational philosophy of VMI centers around providing a high quality undergraduate education within a system of military training and discipline. Central to the mission of the VMI educational system is the development of leadership.

Both the curricular and co-curricular components of VMI emphasize and contribute to the mission of leadership development. All cadets complete four years of Reserve Officers Training Corps (ROTC) instruction in the service branch of their choice. The presence of an ROTC Detachment from each of the respective military service branches provides VMI with a valuable depth of leadership influence and knowledge. The Army ROTC Detachment is currently the third largest in the country. The Navy Detachment is currently the fourth largest in the country, and produces the fourth largest number of Marine Officers. The Air Force Detachment is currently the second largest in the nation. This richness of leadership influence augments VMI's appropriateness as a site to study leadership development.

The co-curricular component of VMI provides potential for the study of leadership emergence and development. The structure and function of the Cadet Corps provides cadets with individual leadership opportunities and responsibilities. Inherent within the structure and function of the Cadet Corps are two principal components: the cadet rank structure, and the cadet class system. The cadet rank structure is responsible for the functions of the Cadet Corps as a military unit. Its responsibilities include the initial cadet training of the freshman cadets, the maintenance of military proficiency of upper-class cadets, military ceremonial responsibilities, and the administrative duties necessary to the operation of a unit of military structure.

The Cadet Corps is organized in the framework of an Army infantry regiment with three battalions of three companies each, and a regimental band company. Each cadet company is served by a Tactical Officer who monitors the cadet officers and overall company performance.

The cadet class system is responsible for the function of the Cadet Corps as a student body in the unique environment that is VMI, with primary responsibility for the management of cadet regulations, the cadet privilege system, and the functions of the "New Cadet System" ("the Ratline"). The responsibilities of these two components of the Cadet Corps require participating cadets to utilize and exhibit a wide range of leadership behavior in the discharge of their duties. As a cadet advances within the rank structure and within the class system through successive years, the demands placed upon his leadership capabilities increase. The longitudinal nature of this study will facilitate examination of initial leadership behavior, and subsequent leadership development of those cadets who eventually assume the more senior cadet leadership positions.

A central element of the Cadet Corps that spans both the cadet military structure and the class structure is the "New Cadet System" ("Ratline"). The Ratline is a demanding regimen of physical and mental challenges endured by all of the members of the Cadet Corps in their freshman year. The Ratline places extreme demands upon a new cadet's physical stamina, mental endurance, and self-discipline. The "New Cadet System" focuses on instilling the attributes of self-discipline, integrity of character, mental fortitude, physical well-being, and uncompromising devotion to the task at hand in an atmosphere of teamwork. The responsibility of managing the "New Cadet System" is undertaken by the cadet leadership, with guidance provided by the Tactical Staff under the command of the Commandant. These leadership opportunities provide cadets with individual leadership experiences in both formal leadership settings, and informal day-to-day leadership responsibilities.

The military structure, emphasis on building stress tolerance, the Spartan living environment, and the student leadership structure set the stage for intense leader/follower interactions. Bass (1992) described VMI's culture as one of high contrasts. In such a culture, one would expect to observe a great deal of both transformational and transactional leadership. The intense interactions between leaders and followers in this high contrast culture were expected to reveal, over the four-year experience, the wide range of leadership behaviors included in our framework.

It is also important to keep in mind that the nature of reporting relationships between the focal cadets and freshmen is generally informal in that all focal cadets have leadership responsibility for all freshmen. However, within each company, focal cadets serving as cadet corporals during their sophomore year have responsibility for the training, development, and performance of the new cadets in their respective

companies. In general, though, the leadership relationships are somewhat more diffused than would be expected in a traditional military leadership hierarchy.

It is important to note that the leadership measures of focal cadets described in this report were obtained very early in the cadet's leadership career. Measures were obtained about focal cadets in their sophomore year, when their leadership responsibilities are limited and closely directed by upperclass cadet officers.

CONTENT VALIDITY—THE RELEVANT LEADERSHIP DOMAIN

Content validation is guided by the question: Is the content domain of this measure representative of the universe of the content regarding the property being assessed? Content validation here represents a judgmental process whereby we attempt to determine if our measures contain behaviors that are isomorphic with the relevant domain of behaviors required to assess leadership development and emergence. In this section, we will justify that we adequately assessed leadership perceived and displayed by the focal cadets by reviewing the theories, models, methods and strategies we employed.

Content validation was accomplished during the first year of this longitudinal study. First, we operationally defined leadership as an influence process that could be examined at different stages of development. This definition was further refined by examining the concept of influence within a broad theoretical model that includes transformational, transactional and nontransactional leadership (Bass & Avolio, 1993). Second, we reviewed the broader leadership literature to identify any relevant leadership dimensions or behaviors that were not explicitly covered in the transformational/transactional model cited earlier (see Lau et al., 1993 for a discussion of this model). This early conceptual work provided the basis for proceeding with the collection of data to determine whether the range of leadership considered relevant to assessing leadership development and emergence could be observed within the VMI context.

To further confirm that the range of leadership identified could be observed in this context, we completed structured observations of leadership and obtained critical incidents of leadership as perceived by cadets. We also conducted open-ended interviews with cadets from all classes asking them to describe what they perceived as leadership at VMI. Finally, we collected retrospective accounts of leadership behavior observed by our focal cadets after they had spent nine months at VMI being exposed to the leadership of upper class cadets, faculty, instructors and staff.

The Full-Range Model of Transformational/Transactional and Nontransactional Leadership

The identification of relevant leadership behaviors for the project were drawn from the theoretical developments that have occurred in the area of transformational, transactional and nontransactional leadership. This section describes this full-range model. Later in the report we describe the framework we used for studying leadership and the measures added to the full-range model.

Considerable attention in the leadership literature has concentrated on operationalizing behaviors that can be largely characterized as representing transactions between leaders and followers (Bass, 1990). Transactional leadership involves exchanges that take place between leaders and followers. These exchanges typically take the form of contracts that outline what followers will receive if they achieve targeted goals and objectives, and/or the penalties for falling below those targets and objectives. The first type of exchange represents a more constructive transaction and has been previously labelled by Bass (1985) as the contingent reward style of leadership. The second type of exchange is management-by-exception, and is based on leaders taking corrective action when followers fail to meet a particular standard. Following a factor analysis by Hater and Bass (1988), active and passive management-by-exception were distinguished from each other. The active versus passive distinction refers to when the leader intervenes to take corrective action. The passive form of management-by-exception represents leaders who only intervene after a mistake has occurred; whereas a more active leader monitors and attempts to avoid mistakes. In the most active form, managing-by-exception represents leaders who are constantly monitoring followers for mistakes or behaviors that would result in a mistake.

Moving up the range in terms of leadership activity, we differentiate between the type of exchanges that occur between leaders and followers. Specifically, if there was an exchange, then what was the nature of that exchange? Does the leader focus on pointing out what's wrong, what's right, what's expected and what remains to be accomplished? Such transactions clarify what the leader expects followers to do, as well as what he doesn't want the follower to do. The primary focus of transactional leadership is to achieve some objective either through rewarding desired behavior or criticizing or punishing undesired behavior.

In sum, three factors are used to represent transactional leadership: contingent reward, active management-by-exception and passive management-by-exception. For the purposes of this project, the full-range of leadership behaviors has as its base point, behaviors of leaders that fall short of being coded as a transaction, and are referred to as laissez-faire leadership. Here the leader has little if any influence on followers.

Although many previous writers have talked about the importance of "transforming" followers to achieve higher levels of motivation and performance [including the work by Weber (1947) on charisma and Downton (1973)] leadership research has been largely dominated by an emphasis on transactions, exchanges and measurement of the behavior exhibited by leaders that characterized the exchanges described above. In this report, our model or framework underscores the importance of going beyond simply focusing on exchanges observed between leaders and followers to include a much broader range of leadership constructs.

Moving from transactions to transformation in the full-range model, the focus shifts from leaders who get followers to achieve a specific objective within a fixed set of parameters to developing individuals, groups and/or organizations to achieve higher levels of potential and performance. Burns (1978) noted that some leaders set out to achieve certain performance objectives, while some transform objectives to a whole new way of thinking about the task and goal. Such leaders are labelled transformational, in that they raise followers' awareness and ultimately their needs from satisfying personal needs to considering the needs of the group, organization or society. Such leaders raise followers from attending to individual gratification to working for the collective good of the group.

At the transformational level, leaders develop followers to achieve a broader sense of purpose. By identifying follower needs and abilities and then raising them, the leader is exhibiting individualized consideration. Such leaders also help followers view traditional problems from a nontraditional perspective, thus not only developing their needs, but also how they view problems and issues around them (intellectual stimulation). Intellectual stimulation represents the second factor of transformational leadership.

Followers see greater benefit in working for the collective mission of the group, rather than simply personally satisfying their own needs. Transformational leaders are characterized as inspiring followers to go beyond self-interests for the collective interests of the group to achieve the highest levels of potential and performance. Inspiration represents the third factor of transformational leadership.

The last two factors comprising transformational leadership are intertwined in that both are linked to charisma. House, Spangler, and Woycke (1991) have shown that it is useful to differentiate between the behavioral aspects of charisma and those which are attributional. Charismatic behaviors are exhibited by leaders who express confidence that followers can meet the challenges confronting them, by leaders who demonstrate a clear sense of purpose that the strategy being pursued is the appropriate one, and by the leader's ability to articulate the values and beliefs that underlie the group and leader's actions. Attributional charisma represents the subjective judgements of followers, regarding the "special qualities" followers associate with the leader. It is important to note that there is not necessarily a one-to-one

correspondence between the number of charismatic behaviors observed and the attributions of charisma assigned to a leader. Some of the other transformational factors may also impact on whether a follower believes in the leader, wants to emulate the leader and sees the leader as unusually qualified to lead others. This fifth and final construct comprising transformational leadership represents a more general summary of how the follower feels about the leader, rather than what the follower may have directly observed.

Transformational leaders are characterized by a higher form of leadership influence as compared to transactional, in that they do not necessarily take problems as given. They question the assumptions underlying the problem and how it is operationalized. They focus on increasing follower potential; they work further out into the future than is typically characterized by most transactions; and they build a collective sense of purpose that guides individuals and/or groups to go beyond satisfying immediate needs and self-interest to addressing longer-term, higher-order collective needs.

The upper end of the full-range model includes leadership influence that has been shown to have a transforming impact on individuals, groups and organizational systems with respect to needs, abilities, perspectives and performance (Bass & Avolio, 1993). By definition, the higher end of the range includes leadership behaviors and characteristics that represent transformational qualities of leadership. Transformational leaders are distinguished from transactional leaders in that they move followers to higher levels of effort and performance by being inspirational, charismatic, intellectually stimulating, and individually considerate.

Transformational leadership also can be considered a global or higher-order construct. Over 78 studies of transformational leadership in the U.S. and abroad, in both military and civilian contexts, have shown the factors of transformational leadership to intercorrelate from .50 to .80, depending on the sample and setting.

Transformational Leadership and Effectiveness. Numerous studies have supported a hierarchy of effects of transformational, transactional and non-transactional leadership in relation to effectiveness. Specifically, transformational leadership correlates between .50 and .80 with measures of organizational and leader effectiveness, and constructive transactional or contingent reward leadership correlates positively but somewhat less than transformational. Passive transactional and laissez-faire leadership has been uniformly negatively associated with the effectiveness of the leader (correlations range from -.30 to -.70). Relationships between active management-by-exception and effectiveness vary depending on the context in which the leader operates (Avolio & Bass, 1988; Bass & Avolio, 1990; Bass & Avolio, 1993).

In addition to civilian samples, studies of effectiveness have included military samples of U.S. Army colonels describing their superiors; U.S., Canadian, and

German NATO field grade officers; U.S. Air Force Academy cadets and officers; a sample of U.S. Navy officers in the surface fleet; and U.S. Naval Academy midshipmen (See Bass & Avolio, 1990; 1993). Interestingly, one pattern in the results that has differed between military and non-military samples is that while corrective transactional leadership (active management-by-exception) is not related, or negatively related, to unit effectiveness in civilian settings, active management-by-exception is exhibited more frequently and is evaluated as generally more effective in military settings (e.g., Yammarino & Bass, 1989). It is also noteworthy in military settings that transformational leaders are rated by followers as being the most effective leaders, are more likely to be promoted to higher rank (Atwater & Yammarino, 1992; Yammarino & Bass, 1989), are seen as role models to follow by Air Force cadets (Clover, 1989), achieve higher company-level performance at the Air Force Academy (Curphy, 1992), and obtain higher ratings of leadership in simulated Army combat exercises (Avolio, Atwater, & Lau, 1993).

Our focus in this study is primarily on the development and emergence of transformational leaders. We have measured five factors comprising transformational leadership, but will also consider transformational leadership as a general, higher-order construct. The five factors measured include attributed and behavioral charisma, inspiration, intellectual stimulation and individualized consideration. We often refer to behavioral and attributed charisma as one factor as both are associated with charismatic leadership. However, as noted below, they are each measured by different indices. Additionally, we have distinguished among constructive and corrective transactions and laissez-faire leadership. We also included measures of additional transactional and nontransactional variables in the final model we employed.

The Leadership Framework Used for Studying Leadership Development

The transformational/transactional model of leadership described above formed the basis for the framework of leadership behaviors investigated in this study. Additionally, based on a comprehensive review of the leadership literature as well as observations, critical incidents and interviews, a number of additional measures of leadership and managerial behavior were included in the current study. The additions to the model which are being investigated are described below.

Reviews provided by Yukl (1971) and Fleishman, Zaccaro, Mumford, Korotkin, Levin, and Hein (1991) concluded that there were managerial behaviors or styles that were not encompassed in the full-range model. Because most comprehensive taxonomies of leadership included managerial behaviors, we were interested in assessing their relevance in this leadership context as well. The managerial behaviors we studied were conceptually and empirically validated by Bass, Valenzi, Farrow, and Solomon (1975) in the following order: direction with and without reason, persuading, consulting, participating and delegating. These were the types of managerial

behaviors leaders used to make decisions and to get followers to perform required work.

Second, the more global or group-focused aspects of supervisory behavior captured by the Leader Behavior Description Questionnaire (LBDQ), i.e., initiating structure and general consideration, were not included in the initial model. Because these factors of leadership have been used so extensively over the last 40 years in leadership research, they were included here as well. In addition, our focal cadet leaders work extensively with groups, as well as individuals on specific tasks, providing further justification for the inclusion of these measures in the current study.

Third, as described above, work by House et al., (1991) suggested that charisma (a primary component of transformational leadership) has two components. One component is behaviorally-based, or representative of what the leader actually does that others view as charismatic. A second component is attributional, or measured in terms of the reaction followers have to the leader. Because charisma is an important component of transformational leadership, we reasoned that it would be important to distinguish attributional from behavioral charisma in our data collection strategy.

Fourth, aspects of reinforcement leadership which included contingent and noncontingent punishment as well as noncontingent reward (Podsakoff, 1987) were also added. In the VMI context, interactions between leaders and followers in the early stages of their relationship are largely corrective in nature. Both contingent and noncontingent punishment were frequently observed being used in this context. These aspects of leadership were also included in the framework.

In summary, the comprehensive framework included the additions of managerial behaviors, initiating structure, general consideration, attributional and behavioral charisma and reinforcement leadership to the full-range model.

CONTENT VALIDITY—METHODS, RESULTS, AND DISCUSSION

One of the primary purposes of the first year of this study was to establish the content validity of our leadership model within the VMI context. The results of these efforts are presented in Lau et al., (1993). During the first year, we completed structured observations of leadership behaviors, collected critical incidents of leadership from focal cadets, conducted interviews, and collected retrospective accounts of leadership from focal cadets. The major findings from the first year are presented below.

Observations

During the first year, the principal investigators spent considerable time acquainting themselves with the leadership context by observing leader/follower interactions in a number of key settings. The settings selected for observation were based on a consensus of recommendations from cadets, faculty, and staff at VMI. Three principal settings are described below.

First, the activities involved in formally introducing the freshman into the "New Cadet System" were observed. In this setting, the leadership behaviors observed were primarily negative and intimidating with many instances of noncontingent punishment observed (i.e., screaming orders, ordering cadets to do push-ups, march, run, etc.). A second setting called "Rat Challenge" (where Rat here refers to a freshman), is a program combining both leadership reaction problems with adventure training ("outward bound") activities. This rigorous physical fitness training is intended to foster the development of self-confidence and the ability to function as a member of a team. Leadership behavior observed in this setting appeared more positive, individually considerate, and inspirational. In the "Rat Challenge" program, leaders (upper class cadets) were observed encouraging, training, and helping freshmen perform activities such as rappelling and running obstacle courses. In a third setting, referred to as "company room training", a broader range of leadership behaviors was observed. This daily training period sets aside time for each company to improve new cadet proficiency and to address training discrepancies that need attention. During "company room training," freshmen are taught the basics of military protocol, marching, handling rifles, maintenance of their quarters, etc. Leaders were observed using motivational talks and contingent reward or punishment, depending on how well the company had performed in activities such as room inspections or parade performance.

The preliminary sampling of observations completed by the principal investigators helped identify a broad range of leadership activities to be observed in more detail, and confirmed the need to include reinforcement models of leadership such as Podsakoff's framework of contingent and noncontingent reward and punishment (see Podsakoff, Todor, & Skov, 1982). While the original model included contingent reward leadership and active intervention to prevent or correct mistakes, that model did not include contingent punishment and noncontingent punishment. Since these behaviors were frequently observed in the current context, measures of these leadership behaviors (as well as noncontingent reward which is also part of the Podsakoff framework) were included.

Critical Incidents (Logs)

To fully capture the range of leadership behaviors that were taking place, each focal cadet was asked to complete leadership logs during their freshmen year. In these logs cadets recorded critical incidents (at specific time intervals) of effective and

ineffective leadership they had experienced or observed. The log forms included opportunities for focal cadets to recall and describe up to five incidents. They were asked a series of questions concerning these incidents: What happened? Where did it occur? When did it occur? What was the result? What was your reaction? Data from the logs were used to assess the overall leadership context, as well as individual behavior of the focal cadets' mentors.

Between August 1991 and February 1992, a total of 2800 log entries (critical incidents) were obtained from focal cadets at four time periods (August, October, November and February). The first three logs asked cadets to record significant leadership events that had occurred in the intervening period, thus the log incidents were based on the cadets' memories. The logs administered in February asked the focal cadets to comment specifically about the leadership that had been displayed by their assigned mentor who was a first class cadet (senior). These incidents were then categorized based on the leadership framework described previously. The development of the categorization scheme and the inter-coder agreement levels are described in Appendix A.

The content of the log incidents and the process of developing the categorization scheme clarified the range of leadership behaviors that occurred in the VMI context. The leadership incidents described supported the relevance of the full-range model of leadership, and confirmed the necessity for including contingent punishment, noncontingent punishment, initiating structure and general, or group consideration, in addition to individualized consideration. Due to the overlap between active management-by-exception and contingent and noncontingent punishment, active management-by-exception was not included in the coding scheme. Similarly, because passive management-by-exception and laissez-faire were difficult to distinguish only laissez-faire was included in the coding scheme.

In the first year, management behaviors described by focal cadets in this setting were primarily directive. The log incidents also highlighted a distinction between leaders who were directive without giving any reason to support their directives as opposed to leaders who were directive, but provided justification for what they told the focal cadets (freshmen) to do. The categorization scheme and framework reflected this distinction.

Results from the content analysis of the first year log entries, presented in terms of the overall frequency of incidents in each type of leader and managerial behavior category, are shown in Table 1. Of the 2800 log entries obtained, 2343 (84%) could be coded in terms of at least one leadership or management category. Some behaviors reported in the logs did not represent clear incidents of leadership behavior (e.g., "Today in calculus I looked at his shoes. They were disgusting"). These were dropped from the coding process.

Table 1.

Percentages of Log Entries in Leadership Categories Completed by Focal Cadets - Year 1				
	Percentages of Responses			
	Aug. '91	Oct. '91	Nov. '91	Feb. '92 ^a
<u>Transformational/Transactional Leadership Behavior</u>				
Charismatic Behavior	0.1%	0.7%	0.2%	1.0%
Inspiration	5.3	6.6	7.1	2.0
Intellectual Stimulation	0.0	0.1	0.0	0.0
Individualized Consideration	20.5	13.5	9.2	45.7
Noncontingent Reward	0.1	0.6	0.0	0.2
Contingent Reward	3.4	6.5	7.5	6.8
Noncontingent Punishment	42.5	25.1	31.1	7.4
Contingent Punishment	12.8	29.6	28.7	23.6
Laissez-faire	0.1	0.3	1.5	2.5
Can't Say	15.0	17.1	14.6	10.9
Total	99.8%	100.1%	99.9%	100.1%
<u>Attributed Charisma</u>				
No Attributed Charisma	91.5	94.2	95.9	96.3
Definitely Attributed Charisma	1.9	1.8	1.5	1.0
Can't Say	6.6	3.9	2.7	2.7
Total	100.0%	99.9%	100.1%	100.0%
<u>Initiating Structure/Consideration</u>				
Initiating Structure	5.2	2.4	2.7	1.0
General Consideration	24.2	25.5	23.8	51.0
Both	13.7	12.9	9.5	11.3
Can't Say	57.0	59.0	64.0	36.7
Total	100.1%	99.8%	100.0%	100.0%
<u>Management Behavior</u>				
Directive - No Reason	20.2	15.3	14.4	6.4
Directive - With Reasons	10.8	22.6	19.5	21.3
Persuasive	23.1	19.8	19.5	11.1
Consultative	.7	1.1	1.2	0
Participative	.5	.7	.2	.2
Delegative	.3	1.0	.2	.2
Can't Say	44.4	39.6	45.0	60.9
Total	100.0%	100.1%	100.0%	100.1%
<u>Response of the Followers</u>				
Negative	38.1	41.0	47.2	24.0
Positive	40.2	44.1	38.2	58.8
Can't Say or Neutral	21.6	14.9	14.6	17.2
Total	99.9%	100.0%	100.0%	100.0%
Total Log Entries Coded	732	712	411	488

^aThe logs completed in Feb. '92 were completed about the focal cadets' mentors.

With the exception of intellectual stimulation, all categories of leadership and management behavior were described, though some were reported quite infrequently. Because intellectual stimulation was a component of transformational leadership in the original model and because it is likely to emerge subsequently during the longitudinal study, it was not dropped from either the coding scheme or the framework.

It is important to note that trained coders on our staff were instructed to code only those behaviors they could confidently place in one category based on the documentation provided in the critical incident logs. Due to this conservative coding scheme and because documentation was not always sufficient to get a clear understanding of the behavior taking place, the frequency of "can't say" codes shown in Table 1 was quite high.

Coding log incidents collected from focal cadets in their first year helped content validate the leadership framework and facilitated the development and refinement of the category scheme for further use in coding critical incidents of leadership behavior subsequently demonstrated by the focal cadets in their second year. The leadership and management behaviors included in the framework and in the categorization scheme are described in Appendix B.

Interviews

Most leadership theory development as well as leadership survey development include interviewing leaders and/or followers. Interviews, like the observations described above, provide a qualitative richness that cannot be fully captured with survey methods. When interviews are unstructured, i.e., the questions are open-ended, such as "what does an effective leader do?", or "provide an example of good leadership", the content is provided by the respondent, rather than driven by the interviewer's implicit theory. Open-ended interviews were conducted with 74 upper class cadets to identify the range of leader behaviors operating at VMI.¹

Generally, the behaviors discussed by cadets at all levels in the institution were similar to the behaviors observed, provided in the logs, or identified by our literature review as relevant in other military and civilian contexts (Adams, Instone, Prince, & Rice, 1981; Bass, 1985; Bass, 1990; Yukl & Van Fleet, 1982). The interviews further confirmed that the leadership framework had captured the most relevant positive and negative leader behaviors that were likely to be demonstrated at VMI.

¹A more detailed discussion of the results of these interviews can be found in Lau et al., (1993).

Summary

Based on the literature review, observations, log incidents, and interviews, support for the framework was obtained. This framework is presented graphically in Figure 1. Definitions of each of the constructs are presented in Appendix B.

In Figure 1, transformational behaviors include charismatic behavior, intellectual stimulation, inspiration and individualized consideration. Attributed charisma is also included in this portion of the framework. As we move from transformational leadership to constructive transactions, leadership behaviors include contingent reward and initiating structure. Corrective, transactional leadership includes contingent punishment, an emphasis on correcting mistakes (active management-by-exception) and passive management-by-exception. Nontransactional leadership includes general consideration, noncontingent punishment, noncontingent reward and laissez-faire leadership. General consideration, noncontingent punishment and reward were each considered nontransactional as they are delivered to followers without any contingencies or direct exchanges with followers taking place. The general consideration scale deals with being sociable, participative, and concerned about the group's performance and, being group-based, does not involve an individual transaction. This leadership is not contingent on the group's performance, thus Seltzer and Bass (1990) concluded that general consideration was empirically and conceptually distinct from individualized consideration and initiation of structure. Laissez-faire leaders are those who attempt to avoid responsibilities altogether. Six management behaviors were also included in the framework. These ranged from least participative (directive with no reasons given) to most participative (delegative) in which the leader turns the decision-making authority over to the follower.

A Further Test of the Content Validity of Measures Using Retrospective Accounts of Leadership

An additional test of the usefulness of this set of constructs was performed with data collected from a retrospective survey of leadership. At the end of their first year at VMI, the focal cadets were asked to describe, at the dimensional (construct) level, the types of leadership/management behavior they had observed during the year. A copy of this survey is included in Appendix C. Because the survey was directed at their personal experiences, initiating structure and general consideration (group-based leadership behaviors) were not measured in the retrospective survey. In addition, some of the titles referring to leadership and management behaviors were changed to be more easily understood by cadets. For example, rather than *laissez-faire*, the title for this type of behavior on the retrospective survey was labelled "avoided leadership."

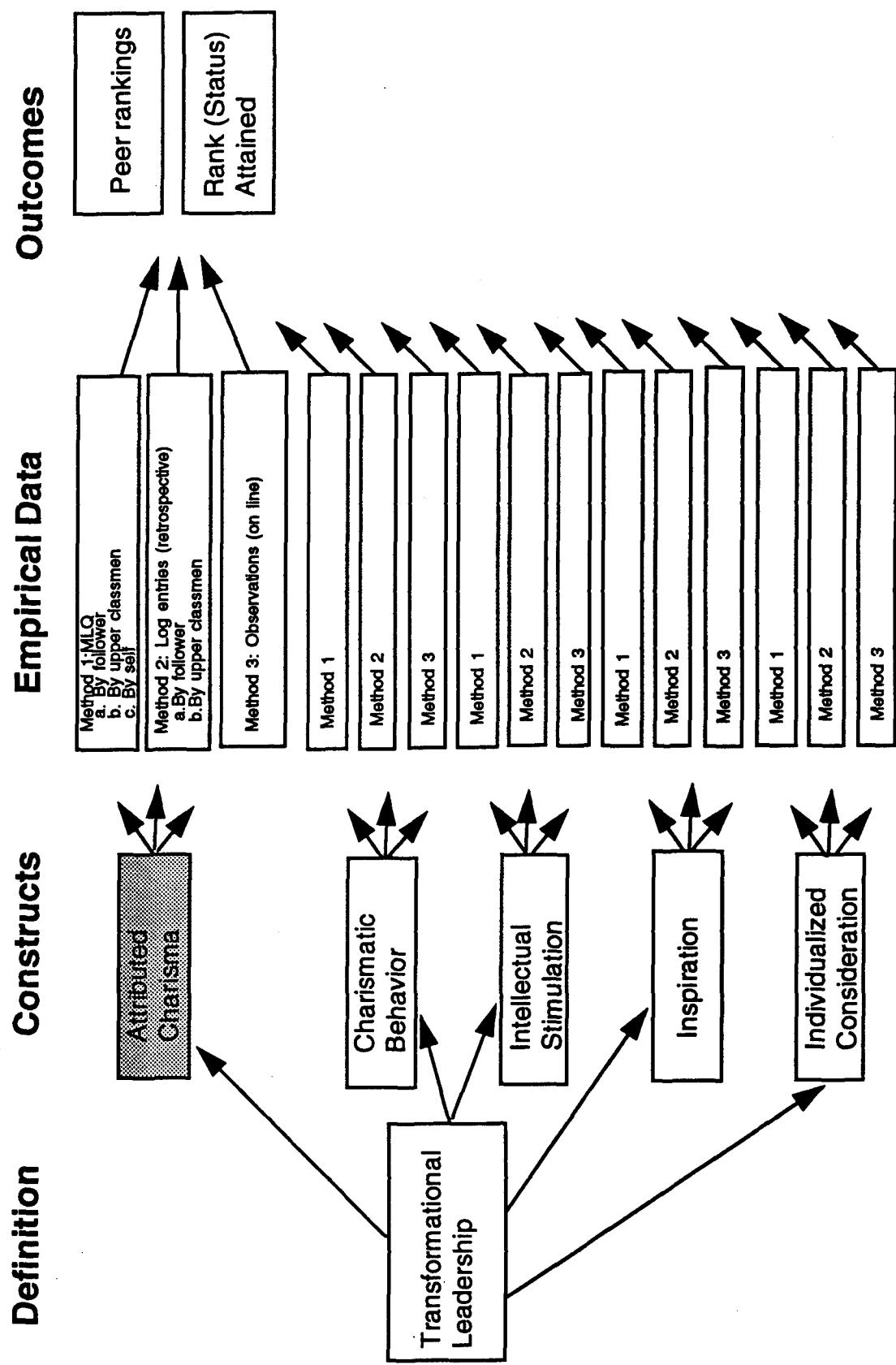


Figure 1. Leadership/Management Framework

Note: Shaded boxes indicate leadership and management behaviors added to the full range model.

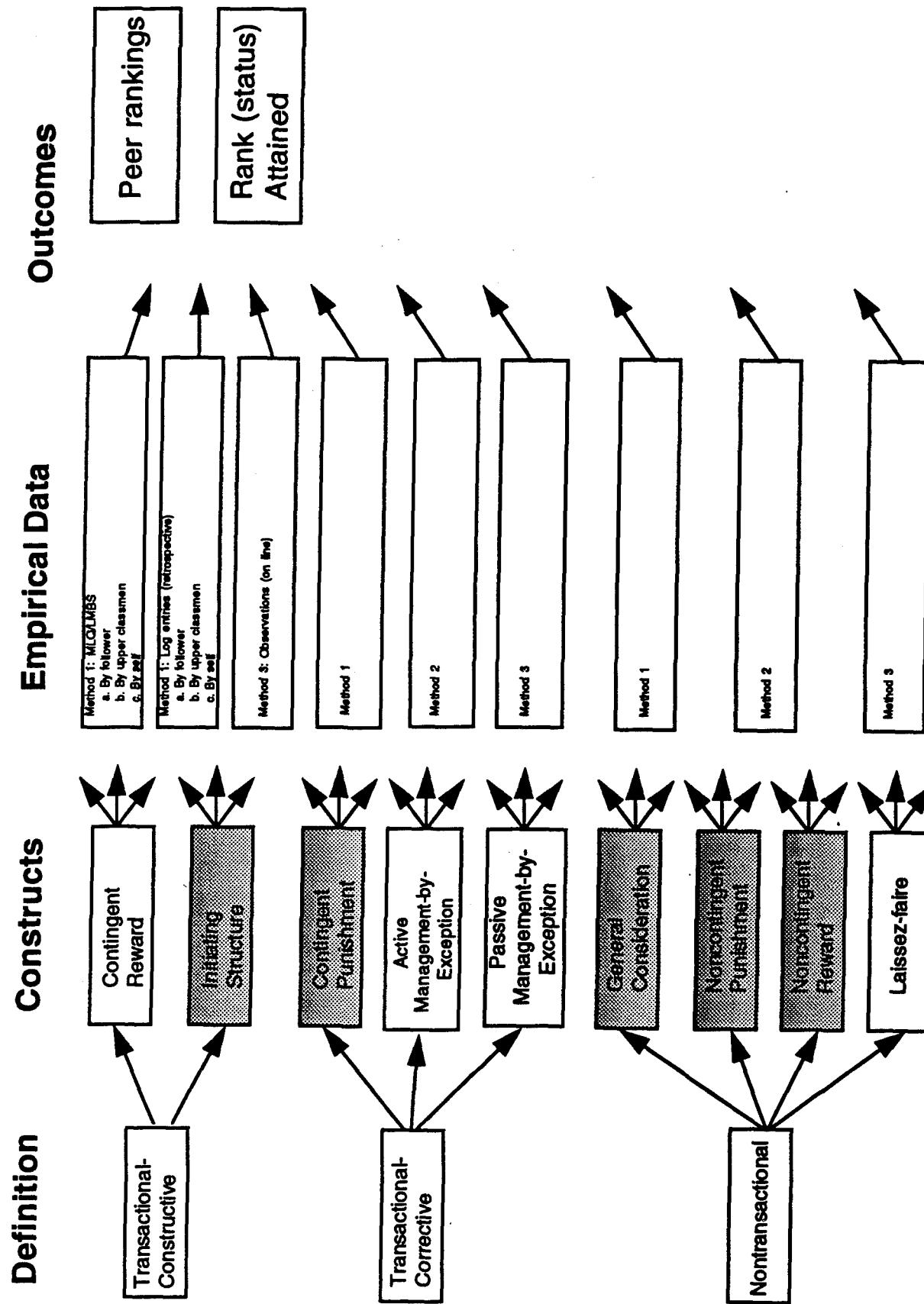


Figure 1 - Continued

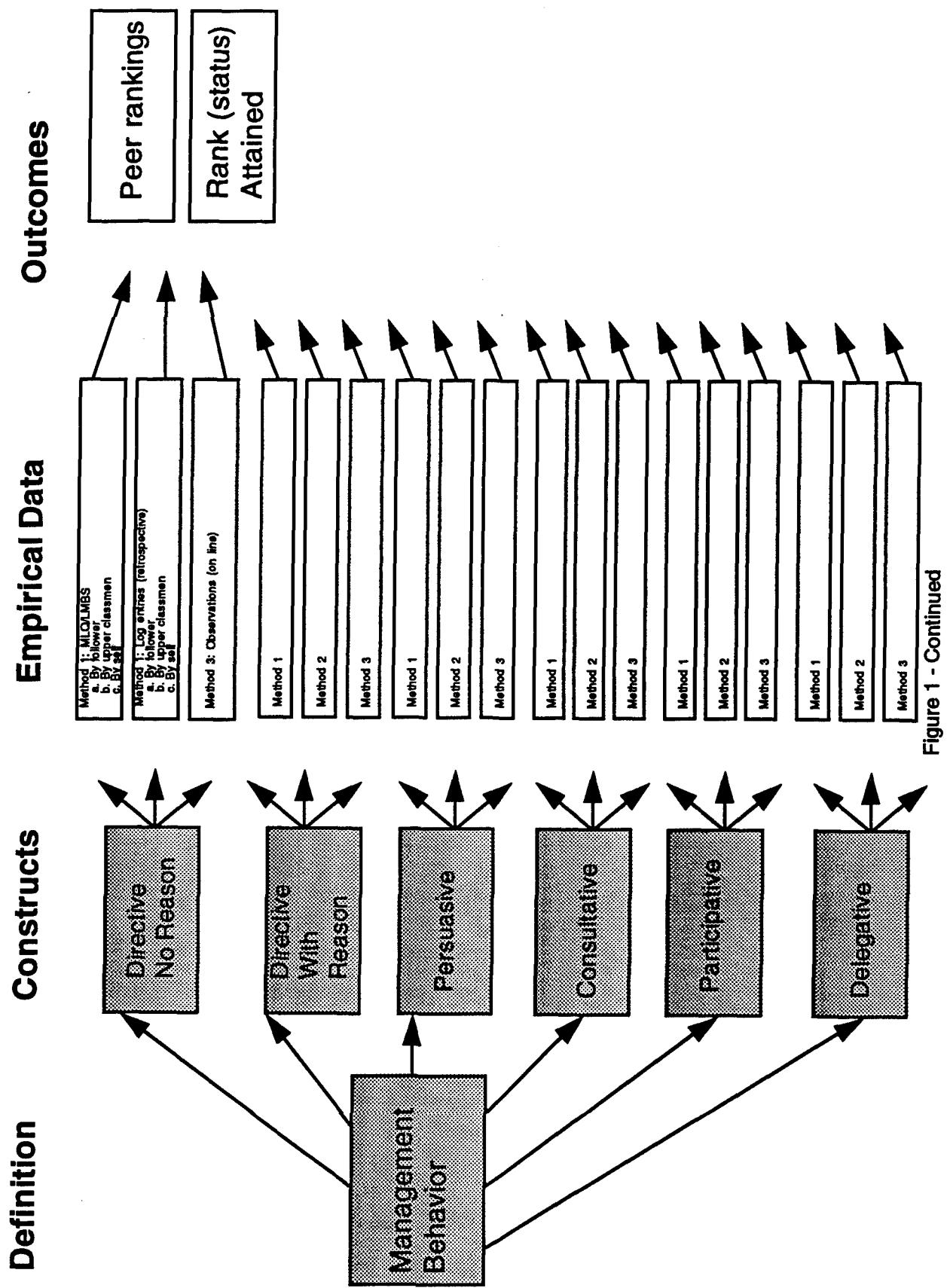


Figure 1 - Continued

Neither active nor passive management-by-exception were included in the retrospective survey because of their overlap with directive leadership and contingent and noncontingent punishment. These active and passive scales however, were retained in the survey measures used to assess the leadership of focal cadets as they have previously predicted leadership performance within a military context (see Yammarino & Bass, 1990).

Results from the retrospective survey are provided in Table 2. As can be seen, each of the leadership behaviors was reported to have occurred either sometimes, fairly often, or frequently. Focal cadets reported observing little noncontingent reward or consultative management behavior. Contingent and noncontingent punishment were observed more often relative to other factors.

There are several possible explanations for the greater frequency of transformational leadership behaviors observed or "remembered" in the retrospective surveys as compared to the logs. First, the retrospective survey was administered late in the academic year when the most challenging activities of the freshman year had been completed and stress-producing leadership behaviors on the part of upper class cadets had been discontinued. Second, earlier log entries contained vivid events, many of which were descriptions of harsh or negative treatment by leaders. Third, while upper class leaders may have displayed transformational leadership behaviors to some degree, fewer transformational behaviors may have stood out enough to be recorded in the logs.

As focal cadets develop and advance within the cadet military structure at VMI, the frequency of observations of various types of leadership and management behaviors will likely change. Nevertheless, results from the retrospective survey indicated that many of the components of leadership were observed by focal cadets during the course of their freshman year.

The next section describes the leadership behavior data collected on the focal cadets as they became eligible to serve in their first leadership position in the second year of the longitudinal study. Again, it is important to recognize that these measures of leadership were based on observations and perceptions of leadership at very early stages in the leader development process when focal cadets have limited opportunities to perform in formal leadership positions. In addition, we expected to have missing data on a number of measures due to the fact that not all focal cadets may have been observed in a leadership capacity.

Table 2.

Summary of Responses to Retrospective Leadership Questionnaire (Completed by Focal Cadets - Year 1)				
Leader Behaviors Experienced During 1st Year at VMI	Mean Response ^{ab}	Not at all/ Once in a While	Sometimes	Fairly Often/ Frequently
Charismatic Behavior	1.68	47.5%	26.3%	26.1%
Inspiration	1.56	47.4%	35.4%	17.2%
Intellectual Stimulation	1.33	54.4%	26.7%	18.9%
Individualized Consideration	1.13	68.0%	20.7%	11.3%
Noncontingent Reward	.52	84.9%	12.6%	2.5%
Contingent Reward	1.40	60.8%	27.4%	11.7%
Noncontingent Punishment	2.36	22.9%	30.9%	46.1%
Contingent Punishment	2.73	14.4%	24.6%	61.1%
Laissez-faire	1.40	56.8%	31.9%	11.2%
Directive--no reason	2.18	24.3%	38.9%	36.7%
Directive--with reasons	1.92	33.0%	42.5%	24.6%
Persuasive	1.57	48.8%	31.9%	19.3%
Consultative	.75	80.7%	13.3%	6.0%
Participative	1.15	68.3%	21.1%	10.6%
Delegative	1.73	42.8%	31.2%	26.0%

Note. Standard deviations ranged from .83 to 1.2.

^aScores were converted from 1-5 to 0-4 scale to allow easier comparisons with other measures.

^bn=285

CONSTRUCT VALIDITY—METHODS

Once the domain of leader behaviors was identified, a second concern involved selecting appropriate methods for collecting leadership data. A multi-source/multi-method approach was employed. There is virtual consensus in the leadership field that to maximize validity, leadership data must be obtained from multiple sources, and optimally should be obtained using more than one method (Bass, 1990; Yukl, 1981; Uleman, 1991; Howard, 1990). To establish construct validity, the following procedures were utilized: (1) a comparison of log entries about focal cadets collected from upper classmen and freshmen; (2) a comparison of Multifactor Leadership Questionnaire (MLQ) scales collected from focal cadets, upper classmen, and followers; (3) an examination of the intercorrelations between the MLQ and the Leadership and Management Behavior Survey (LMBS) scales; and (4) a comparison of the relationship between MLQ scales and log entries. As noted earlier, in order to demonstrate construct validity, there must be some convergence of leadership scores across various rater groups (convergent validity) as well as discriminant validity. Thus, we also assessed the convergent and discriminant validity of the MLQ across focal cadets, upperclassmen and freshmen. A summary of data collected is provided in Table 3.

Subjects

The focal subjects for both construct validation and criterion-related validation included 286 cadets in their sophomore year who entered VMI in 1991.² All freshmen and all upper classmen enrolled at VMI during the 1992-1993 academic year also served as subjects in that they were asked to describe, in various ways, the leadership behavior of the focal cadets. Depending on the method used, the exact number of focal cadets, freshmen, and upper class respondents varied. This was largely due to the nature of the VMI schedule and to the cadet's ability to be present for all data collection activities. This discrepancy of data collection is reflected more so in the number of upper class cadet responses than in the number of freshmen cadet responses.

²We began the study in 1991 with 401 focal cadets. Since that time, 115 cadets have left the Institute.

Table 3.

A Summary of Leadership Data Collected about Focal Cadets					
Rater/Measure	Number Used	Number of Raters	Number of Focal Cadets Measured	Average Number of Raters per Focal Cadet	Range of Raters per Focal Cadet
Follower MLQ	660	287	226	2.9	1-10
Self MLQ	248	248	248	1.0	0-1
Upper Class MLQ	318	230	180	1.75	0-6
Follower LMBS	227	N/A ^a	149	1.5	0-6
Follower Logs ^b	1109	350	179	6.2	0-32
Upper Class Logs ^b	182	224	103	1.7	0-6
Observations	225	N/A	79	2.8	0-7

^aThe number of raters was not available as answer sheets were collected without noting how many raters completed them.

^bFollower logs were collected twice during the year from approximately 350 freshman. Upper class logs were collected once.

Data Collection Design

Data concerning leadership displayed by focal cadets in Year 2 were obtained from the focal cadets themselves, subordinates, superiors, and unrelated observers using critical incidents (logs), surveys and observations. The survey data served as the primary basis of the leadership measurement methods, with supplementary data provided by the logs and observations.

Figure 2 presents the source/method combinations that were used to obtain data on leadership behavior in the current study. Augmenting surveys with observations and critical incidents (leadership logs) allowed us to capitalize on the strengths of each method. For example, the use of surveys allowed for the collection of a large amount of data across a wide range of dimensions.

<u>Source</u>	<u>Method</u>			
	<u>Survey</u>	<u>Observation</u>	<u>Critical Incidents</u>	<u>Effectiveness</u>
Self	MLQ/LMBS			
Peer				peer ranking
Follower	MLQ/LMBS		logs	extra effort
Upper Class	MLQ		logs	
Observer		various		
Multi-source				Corporal rank attained

Figure 2. Sources/Methods Used to Obtain Leadership Data for Construct and Criterion-Related Validation

It was our expectation that the survey data would be most complete. That is, because we could ask a number of raters to describe each leader on a survey, the majority of cadets would have one or more surveys completed about him. Additionally, the survey data allowed us to create scores for each cadet on each aspect of leadership and management behavior. An additional advantage of the survey data is that they

will allow us to more easily track changes, as we will administer the same survey in the future.

Our objective was to administer leadership logs to obtain critical incidents about each focal cadet. The types of behaviors described were up to the rater: thus, we did not get descriptions of each type of behavior on each focal cadet. Raters were also not always able to describe specific incidents of leadership about a named focal cadet, and thus there were missing log data for some cadets. The observational data were least controllable in that observers were asked to describe the behavior of individuals who were performing in leadership capacities in a variety of different settings. Not all cadets were observed, and no cadets were observed across all settings.

It is also important to keep in mind that the collection of observational data and survey ratings were conducted during the natural course of events within the VMI context. Consequently, we expected that there would be differential opportunities to both observe and rate the focal leaders, and we expected to obtain varying amounts of data across the focal cadet population.

Critical Incidents (Logs)

During Year 2, critical incidents of leadership were collected from followers (freshmen) and upper classmen (juniors and seniors) about specific leader behaviors exhibited by the focal cadets (sophomores). The format used to collect these data was the same as the leadership logs in Year 1. That is, cadets were asked to describe what happened, where it occurred, when it occurred, what the results were, and what their reaction was to the behavior displayed by the focal cadet. During the second semester of the focal cadets' second year, all freshmen (or the focal cadets' followers) and upper classmen (the focal cadets' superiors in the leadership structure) were asked to describe up to three incidents they had observed that involved a named focal cadet in a leadership role. If the rater did not know the named cadet well enough to rate him, the rater was given the name of another cadet to rate. If the rater still did not know the cadet, he was told to select someone he could rate. This did not occur often. The focal cadets that each person was asked to rate were randomly selected from a list of focal cadets within the rater's company.

A total of 1,221 critical incidents were obtained from approximately 350 freshmen and 331 critical incidents were obtained from 224 upper class cadets.³ Followers completed logs in November and March, and upper class cadets completed logs once in March. Of the 1,221 leadership incidents recorded in the logs by freshmen about focal cadets, 1109 or 91 percent were codeable; 182 or 55 percent of the 331 incidents provided by upper class cadets (juniors and seniors) about focal cadets were codeable. By codeable, we mean the behavior was described in sufficient detail to be placed reliably into at least one of the leadership or management behavior categories. In a number of cases, the cadets did not describe a specific leadership behavior, but rather commented on leadership traits or other attributes of the cadet they were asked to describe. A review of the uncodeable logs, however, did not reveal any indication that logs were dropped because they described behaviors not included in the framework. Rather they were either irrelevant comments or too brief to be accurately coded. It is important to keep in mind that not all cadets participated. Due to time constraints, only 50 percent of the upper class were asked to participate and many of the followers had other commitments such as athletics which kept them from completing surveys. This resulted in response rates of 45% for upper class and 85 percent for followers. As a consequence, 36 percent (n=103) of the focal cadets had codeable critical incident data provided by at least one upper class cadet. Sixty-three percent (n=179) of the focal cadets had codeable critical incident data provided by at least one freshman. Regarding upper class logs, 60 focal cadets had one log completed on them, 25 had two logs, and 18 had three or more logs completed. Regarding freshman logs, 66 focal cadets had one or two logs completed on them, 49 had three to five logs completed, and the remainder of focal cadets (64) had more than six logs.

The data were coded into categories in five separate areas: (1) the type of leadership behavior displayed; (2) the presence or absence of attributed charisma; (3) whether initiating structure, consideration, or both were described; (4) the management behavior described; and (5) the response of followers, i.e., positive, negative or neutral. These incidents were coded using the same procedure as described in Appendix A.

Surveys

Two surveys were used to assess leadership behavior of focal cadets. The Multifactor Leadership Questionnaire (MLQ Form 5X), which measures

³Upper classmen surveyed often did not yet know a named focal cadet well enough to rate him, or had not observed leader behavior displayed by that cadet. As a consequence, only 331 log entries were collected from the upper class evaluating focal cadets.

transformational, transactional, and nontransactional leadership was administered to followers, focal cadets, and upper classmen during the Spring semester. A second survey, the Leadership and Management Behavior Survey (LMBS), that included items measuring managerial behaviors, initiating structure, general consideration, noncontingent and contingent punishment, and noncontingent reward was administered to followers and focal cadets at a separate time in the Spring. These surveys are described in detail below.

MLQ Form 5X. The MLQ Form 5X is the most recent version of an earlier survey published by Bass and Avolio (1990) with Consulting Psychologists Press--MLQ Form 5R. The development of the MLQ Form 5X has been based on over a decade of research on earlier forms that have confirmed the factor structure described in the introduction of this report. Similar to MLQ Form 5R, Form 5X measures the following: (1) four transformational factors: charismatic behavior (10 items), inspiration (10 items), individualized consideration (9 items), intellectual stimulation (10 items); (2) three transactional factors: contingent reward (9 items), active management-by-exception (7 items), passive management-by-exception (7 items), and (3) laissez-faire leadership (8 items). In addition to these 70 items, and for reasons stated earlier, we also included in MLQ Form 5X a scale to assess attributed charisma (8 items), and three items measuring followers' perceived extra effort expended as a consequence of leadership. Extra effort is conceived in the full-range model to be the motivation of followers to perform beyond expectations as a consequence of transformational leaders. Consequently, extra effort is seen as an outcome measure.

A series of factor analyses with earlier versions of the MLQ Form 5R has produced four general factors that can be labelled transformational, constructive transactional or contingent reward, corrective transactional (managing-by-exception passively or actively), and laissez-faire leadership. A number of prior studies have confirmed this factor structure (Bass & Avolio, 1993); thus, it was used as the basis for the assessment of convergent and discriminant validity described later in this report.

MLQ-Administration. In February, 1993, 287 freshmen followers completed MLQ's about the focal cadets. Each follower received the names of five randomly selected focal cadets from within his company. He was asked to rate the first three cadets on the list on each of the MLQ items. If the cadet did not know any one of the first three cadets well enough to rate him, he was instructed to rate the person whose name appeared fourth or fifth on the list. If the rater still did not know a named cadet, he was told to select a cadet he knew well enough to rate and include his name. This did not occur often.

In March, 1993, the same procedure was followed for the upper classmen (juniors and seniors), but due to time constraints only 50% of the upper classmen were asked to participate and they were asked to rate only two focal cadets from the list of names. Two hundred and thirty (approximately 46%) upperclassmen completed

MLQ's about focal cadets. Focal cadets also completed MLQ's describing their own leadership behavior. Two hundred forty-eight or 93% of the focal cadets completed self-ratings on the MLQ.

Because all raters were instructed to leave an item blank if they were unsure or did not know how to rate the focal individual on an item, there were a number of surveys returned with large amounts of missing data. Such missing data were expected in that some followers or upper classmen in a company had not observed the focal cadets often enough to rate their leadership behavior reliably and thus they legitimately left the surveys blank. We also had some surveys that were completed inaccurately, indicated by the fact that their last item was completed in the wrong space on the answer sheet, with no indication as to where the error occurred. Consequently, the final numbers of useable surveys (those with less than 50% missing data and responses ending in the appropriate column) completed were: 660 follower surveys; 248 focal cadet self-surveys; and 318 upper class surveys. Twenty three percent (or 63) of the focal cadets had no surveys completed by followers, 20 percent (or 52) had one survey completed by a follower and 57 percent (or 151) cadets had more than one survey completed about him. The maximum number of surveys completed about a single cadet was ten, though most of those with multiple ratings had two or three. Responses within each rater group for those cadets who received more than one rating were aggregated and averaged to create one "follower rating", and one "upper class rating" for each focal cadet on each leadership scale.

Factor Analysis of the MLQ Form 5X⁴. The individual (unaggregated) follower responses to the MLQ Form 5X were analyzed using factor analysis with varimax (orthogonal) rotation.⁵ The factor analysis was used to support the validation of the model, rather than to develop new scales based on this single factor analysis. The confirmatory results of this factor analysis are presented below in the results section. We included items in scales based on the model and earlier work confirming the scale composition. We then computed reliabilities to assess internal consistency of the scales.

⁴Since the sample sizes in the current study were small relative to the number of survey items and since respondents were encouraged to leave items blank of which they were unsure, the factor analysis performed on this sample should be considered preliminary. When additional MLQ data are collected in Year 3 of the study, factor analyses will be repeated incorporating this additional data.

⁵We used individual returns (multiple raters of single leaders) to assess the construct validity of the MLQ. At this stage in the analysis there is no rationale for aggregating raters, whether they are evaluating one leader or more than one leader. The appropriate unit of analysis chosen was the rater.

Leadership/Management Behavior Survey (LMBS). A second survey was designed to measure the constructs that were added to our leadership framework. This survey included items measuring management behaviors, initiating structure, general consideration, contingent and noncontingent punishment and noncontingent reward. Specifically, four items measured each of five management behaviors: directive, persuasive, consultative, participative, and delegative. These items were adapted from Bass et al., (1975). Directive management behavior with or without reason was not distinguished on the survey (as was done in the log categorization) in order to maintain the integrity of these scales as they originally appeared in the Bass et al., (1975) survey.

Five items assessed initiating structure and five items measured general consideration. Items measuring these two constructs were taken from the LBDQ (Stogdill & Coons, 1957). Five items assessing contingent punishment, four items assessing noncontingent punishment and four items assessing noncontingent reward were also included. These items were taken from Podsakoff et al., (1982).

The LMBS was completed only by followers of focal cadets. Followers completed a total of 227 surveys on 149 focal cadets. Fifty-two percent of the focal cadets had at least one LMBS survey completed about him. The low return rate was partially due to the late time in the semester in which the survey was administered, as well as the lack of familiarity, on the part of some raters with the focal cadets they were asked to rate. Many of the cadets were unavailable to complete it at the time of administration. Upper classmen are scheduled to complete the LMBS in the Fall of 1993. The survey also will be administered to focal cadets and re-administered to followers at this time.

The LMBS was completed in the same manner as the MLQ, i.e., followers were asked to rate named focal cadets. Where appropriate, follower ratings were averaged to create follower scale scores for each focal cadet. Due to the small number of respondents relative to the number of items, and because items came from published scales, factor analyses were not performed on these data. Scales were created as indicated by their original authors.

Observations

In this study, selected observations were made of a subsample of focal cadets assuming leadership roles in situations previously identified as conducive to observing leader behavior. Two of these settings were described briefly above, i.e., "company room training" and "Rat Challenge". Additional settings were also observed: Army ROTC Field Training Exercises, club sports and miscellaneous activities such as Cadet Corps military duty responsibilities.

"Company room training" is a training period in which the upper class cadet officers in each company teach, motivate and discipline the freshmen cadets or "Rats". A company is comprised of approximately 110 cadets; 25-30 from each of the freshman, sophomore, junior, and senior classes. This training occurs 3-4 times a week. Throughout the year, many of the focal cadets served as corporals or squad leaders. Cadet corporals are instrumental in this training process. Forty-three observations were made of focal cadets functioning in the leadership role of a cadet corporal during company room training. Observations were completed by upper class cadets, trained to conduct the observations.

A second situation, "Rat Challenge" provided an opportunity to observe a sample of focal cadets working to help freshmen develop their physical conditioning, self-confidence, and team-building skills. Approximately ten percent of our focal cadets performed leadership roles in the "Rat Challenge" program. Seventy-six observations were made during "Rat Challenge" activities.

A third situation, Army Field Training Exercises (FTX) was observed. These exercises are conducted to place the cadet in a leadership position parallel to one he would assume as a commissioned junior officer. A sample of focal cadets was observed serving as team leaders and/or squad leaders in various combat simulations. These exercises took place at Fort Bragg as part of the Army ROTC program. A total of 91 observations were made during the FTX.

Cadets were also observed performing in various athletic practices and in interaction with teammates. Also observed were focal cadets interacting with, instructing, and leading the freshmen carrying out various military duty responsibilities. Fifteen observations took place during these activities.

Seventy-nine focal cadets were observed in one or more of the situations described above. A total of 225 leadership behaviors were recorded. Four cadets had observational data in three situations, and twenty had observations in two situations. A cadet could also have more than one leadership or management behavior coded by the observer during a single observation if more than one type of behavior was prominently displayed.

Observation Checklist. Based on the framework of leader behaviors used in the current study, an observation checklist was developed for observers to use in recording leader behaviors. The observation checklist was structured following the leadership log coding scheme (the observation checklist format is included in Appendix D). Observers were asked to record the extent to which leadership behaviors were occurring in nine categories: inspirational/charismatic, intellectual stimulation, individualized consideration, contingent reward, noncontingent reward, contingent punishment, noncontingent punishment, laissez-faire, and can't say. The observer then recorded the extent to which he had observed initiating structure, general consideration, both or can't say. The third decision made by the observer concerned the management behavior. The observer indicated the extent to which

behavior was directive with reason, directive without reason, persuasive, consultative/participative, delegative or can't say. The observer also indicated the follower's reaction (positive, negative or can't say) during the leader/follower interaction. The inspirational/charismatic categories and the consultative/participative categories were combined because a pre-testing of the observation checklist indicated that observers were unable to reliably distinguish among these pairs of behaviors.

Training Observers. Observers were trained to identify behaviors representative of each leadership and management behavior category. Observers were upper class cadets familiar with the leadership contexts being observed who were hired to work as research assistants. Training involved reading category descriptions and behavioral examples followed by discussion with the principal investigators about any questions or uncertainties concerning the checklist coding scheme. At this point, the observers were asked to code 20 written sample behaviors taken from the log incidents that had been previously coded. These sample behaviors allowed the rater to test himself against codings completed by other experienced coders. If the trainee could accurately code i.e., match the codes achieved by consensus of the principal investigators and trained cadet raters on the 20 sample behaviors, he accompanied a second observer (also trained by the principal investigators) to code observations. Once the observer trainee felt comfortable with the checklist and the trainer was confident that the new observer understood the checklist system, he was permitted to record observations on his own.

Instructions for Observations. Observers were instructed to identify a focal cadet performing in a leadership role in one of the activities/events previously identified (e.g., "company room training," "Rat Challenge," FTX). The observer noted the name of the leader and the situation being observed. He then observed the behavior of the leader for approximately five minutes.⁶ After the observation period, the observer coded the leadership behaviors, management behaviors, and follower(s)'s reaction(s) displayed by the leader during the designated time period on a behavior checklist.

Hypotheses

To determine construct validity of the leadership constructs, a network of relations must be examined. An "umbrella" of linkages of observed relationships with the construct that fit logical expectations provides the basis of the validation. We must assess the ways in which measures of constructs relate to one another, whether or not those relationships are similar to results obtained with other samples, and whether our results are consistent with expectations given the context in which measures were gathered. We had a number of expectations in terms of relationships among

⁶In the FTX situation, observation periods were over a longer period of time as cadets were observed throughout an entire exercise.

constructs and between samples. In general, we expected consistencies between findings from this and other military samples. We also expected congruence among methods. The military atmosphere and the rigorous physical and mental challenges experienced by all freshman cadets suggested a number of relationships among constructs and samples. The first three hypotheses concerned the construct validity of our measures. The following three concerned criterion-related validity. Specifically, we hypothesized:

1. The physical and mental challenges imposed upon freshman cadets by upperclass cadets will result in a greater number of reported incidents of noncontingent punishment and contingent punishment leadership behaviors from freshman rating focal cadets, compared to the constructive transactional, transformational or more passive nontransactional behaviors (i.e., noncontingent reward, laissez-faire). Similarly, focal cadets will be rated as more directive than nondirective given their role in the indoctrination system. Also, due to the more dependent relationships between focal cadets and followers than between focal cadets and upper classmen, followers will report more individualized consideration than will upper classmen.
2. With respect to the full-range model, there will be a greater number of both transformational and active transactional leadership behaviors (i.e., contingent punishment, active management-by-exception) observed in focal cadets as compared to noncontingent reward and laissez-faire behaviors. Specifically, focal cadet leaders will be seen as being more active rather than passive leaders by freshman raters.
3. Consistent with earlier work (see Bass & Avolio, 1993), transformational leadership scales will be highly positively correlated with contingent reward transactional leadership, less positively correlated with active management-by-exception and negatively correlated with passive management-by-exception and laissez-faire leadership.
4. Consistent with earlier research focused on criterion-related validity (see Bass & Avolio, 1993), transformational leaders will be more effective. Specifically, those cadets rated higher on transformational leadership will receive higher ratings from peers in terms of leadership effectiveness, will have achieved higher rank in the cadet rank structure, and will elicit more extra effort from followers.
5. Passive management-by-exception and laissez-faire leadership will be negatively related to peer rankings and to rank (see Bass, 1985).
6. Similar to other samples (see Bass & Yammarino, 1991), self-ratings on the MLQ will be higher than follower or upper class ratings of transformational leadership. In addition, transformational and other forms of active leadership will be reported as occurring more often than passive management-by-exception and laissez-faire leadership.

Although there is no prior research on which to base predictions regarding the relationships between transformational leadership and the various management behaviors, the following relationships were expected:

7. Transformational leadership will be positively related to delegative, participative, and consultative management behaviors. There will be no relationship between transformational leadership (which has a follower focus) and the ratings of directive management behaviors which are non-participative.
8. Laissez-faire leadership will be negatively correlated with the most active management behaviors, i.e. directive management.

Results concerning the construct validity and convergent/discriminant validity of the leadership measures are presented below. Results on criterion-related validity are presented in the following section.

CONSTRUCT VALIDITY--RESULTS AND DISCUSSION

Critical Incidents (Logs)

Results from the log data describing focal cadets indicated that, consistent with expectations, noncontingent punishment was one of the most frequently mentioned types of behaviors described by the freshmen (followers) of focal cadets (See Table 4). Also as predicted, laissez-faire leadership and noncontingent reward were mentioned infrequently by followers, while followers described many incidents of individualized consideration. Contrary to expectations, followers reported few incidents of intellectual stimulation, contingent reward or charismatic behavior. Upper class cadets, on the other hand, mentioned inspiration or laissez-faire most often and noncontingent reward, contingent reward and intellectual stimulation least often. There were few instances of attributed charisma described by either freshmen or upper classmen.

Initiating structure and consideration were difficult to differentiate in the log observations. For follower data, a total of 62.1 % and for upper class 67.4% of the responses were coded as both initiating structure and consideration, or as "Can't Say".

The management behaviors described most frequently by freshmen and upper classmen were directive with reason and persuasive. Consultative, participative and delegative were very rarely observed. These findings were as hypothesized. Reactions to the focal cadet leaders were generally positive as described by both freshmen and upper class cadets in the majority of the incidents.

Table 4.

Percentages of Log Entries in Leadership Categories Completed by Upper Classmen and Followers about Focal Cadets - Year 2		
Leadership Behavior	Percentage of Responses	
	(n=182)	(n=1,109)
Charismatic Behavior	4.9%	0.4%
Inspiration	17.0	8.6
Intellectual Stimulation	0.0	0.2
Individualized Consideration	7.7	33.6
Noncontingent Reward	0.0	0.1
Contingent Reward	0.5	3.1
Noncontingent Punishment	7.1	20.4
Contingent Punishment	9.3	7.7
Laissez-faire	13.7	0.5
Can't Say	39.8	25.4
Total	100.0	100.0
Attributed Charisma Focals		
Percentage of Responses		
Upper Classmen Rating Focals		Followers Rating Focals
No Attributed Charisma	91.8%	86.3%
Definitely Attributed Charisma	3.3	3.3
Can't Say	4.9	10.4
Total	100.0	100.0
Initiating Structure/ Consideration		
Percentage of Responses		
Upper Classmen Rating Focals		Followers Rating Focals
Initiating Structure	16.0%	3.9%
General Consideration	16.6	34.0
Both	20.4	34.2
Can't Say	47.0	27.9
Total	100.0	100.0
Management Behavior		
Percentage of Responses		
Upper Classmen Rating Focals		Followers Rating Focals
Directive - No Reason	0.6%	9.6%
Directive - With Reasons	21.1	17.3
Persuasive	30.6	29.0
Consultative	0.6	0.3
Participative	0.0	0.3
Delegative	0.6	0.3
Can't Say	46.7	43.2
Total	100.2	100.0
Response of the Follower		
Percentage of Responses		
Upper Classmen Rating Focals		Followers Rating Focals
Negative	20.3%	24.8%
Positive	62.6	68.6
Can't Say or Neutral	17.0	6.6
Total	99.9	100.0

The validity of the measures of leadership are also seen in part by comparing the log data obtained from followers with those from upper class cadets. For instance, we expected that more arbitrary corrective leadership would have been reported by freshmen rating focal cadets than by upper classmen rating focal cadets. Indeed, 20.4 percent of the logged behavior of focal cadets according to freshmen was noncontingent punishment, while only 7.1 percent of the same behavior was reported by upper classmen. The much greater individualized consideration reported by freshmen was also expected due to the closer relation that existed between the freshmen and focal cadet leaders they were describing, than between the focal cadets and upper classmen. The same reasoning applied to the differences seen in the initiating structure and consideration categories.

Similar results could be seen for management behaviors. When freshmen provided log descriptions of the focal leaders, 9.6% of the behaviors reported were directive without reason. Only 0.6% of the behaviors reported by upper classmen were directive without reason.

Surveys

MLQ--Descriptive Statistics. Means, standard deviations and alpha coefficients of reliability for the MLQ data collected from followers, focal cadets and upper classmen are presented in Table 5. With one exception (active management-by-exception as rated by focal cadets), all reliability coefficients were above .70, and many were above .90. Thus, these scales can be considered internally consistent.⁷

The patterns of self versus others' ratings shown in Table 5 have also been seen in other military samples when the same scale scores were examined (Atwater & Yammarino, 1989; Bass & Yammarino, 1991; Yammarino & Bass, 1990). The pattern of means for self-ratings presented in Table 5 reveals that focal leaders' self-ratings were higher than ratings obtained from followers or upper classmen for the transformational components. They were also higher for contingent reward. Self-ratings were lower for passive management-by-exception and laissez-faire leadership. Although self-ratings of attributed charisma were inflated as expected, active managing-by-exception showed no differences across rater groups. In general, the patterns of scale scores that emerged from the VMI sample appeared to be similar to what has been seen repeatedly elsewhere (see Bass & Avolio, 1990).

⁷Reliability coefficients were created with individual data, not aggregated scores.

Table 5.

Descriptive Statistics for Multi-Source Ratings on the Multifactor Leadership Questionnaire (MLQ)										
Multifactor Leadership Questionnaire Scale ^a	Followers (n=242)			Others' Ratings ^b Upper Classmen (n=170)			Self-Ratings Focal Cadets (n=248)			
	α	M	SD	α	M	SD	α	M	SD	
Attributed Charisma	.90	2.27	.76	.87	2.33	.91	.72	2.81	.50	
Charismatic Behavior	.90	2.04	.72	.85	2.01	.77	.78	2.74	.57	
Inspiration	.91	2.07	.74	.88	2.25	.85	.84	2.74	.59	
Intellectual Stimulation	.90	1.88	.66	.85	2.00	.81	.76	2.51	.51	
Individualized Consideration	.88	1.98	.76	.87	2.10	.87	.81	2.66	.59	
Contingent Reward	.91	1.90	.71	.86	1.97	.86	.81	2.49	.61	
Management-by-Exception - Active	.71	1.96	.56	.75	1.85	.68	.53	2.00	.52	
Management-by-Exception - Passive	.77	1.72	.68	.75	1.80	.71	.78	1.30	.64	
Laissez-faire	.83	1.55	.68	.84	1.68	.80	.86	1.10	.70	

^aScale item responses ranged from 0 = "not at all" to 4 = "frequently if not always".

^bOther cadets' ratings of the focal cadets.

MLQ Results--Factor Analysis. Follower ratings of focal cadets were factor analyzed. A principal components factor analysis with varimax rotation was completed on the intercorrelation matrix of the 78 MLQ Form 5X leadership items. There was high communality among the behavioral items ranging from .50 to .72. Convergence occurred after 14 rotations. Eigenvalues were 1.0 or above for 11 factors, accounting for 61.0 percent of the common variance among items. The first few factors, however, contained most of the common variance as noted in Table 6. To interpret and label each factor, the two items with the highest loadings on each of the 11 factors were identified.

Nine of the factors were clearly interpretable in terms of the full-range model of leadership measured by the MLQ; two were not.

The nine factors interpretable in terms of the leadership behaviors expounded in the model were as follows:

I Inspiration

Expresses his confidence that I will achieve my goals (.78)⁸
Encourages followers to try their best (.77)

II Passive Management-by-Exception

Fails to intervene until problems become serious (.71)
Things have to go wrong for him to take action (.71)

III Active Management-by-Exception

Keeps track of my mistakes (.75)
Searches for mistakes before commenting on my performance (.63)

IV Charismatic Behavior

Displays a high level of self-confidence (.52)
Behaves in ways that are consistent with his expressed values (.48)

V Individualized Consideration

Listens attentively to my concerns (.48)
Treats each of us as individuals with different needs, abilities and aspirations (.33)

VI Intellectual Stimulation

Re-examines the way things are done to question whether they are appropriate (.66)
Questions the traditional ways of doing things (.48)

IX Laissez-faire Leadership

Resists expressing his views on important issues (.65)
Delays responding to urgent questions (.40)

⁸Factor loading.

Table 6.

Eigenvalues and Common Variance Accounted for by the 11 Factors								
Factor	Items ^a		Label ^b	Eigen-value	Variance Accounted		Highest Two Loadings	
I	35,	45	Inspiration	28.8	% 35.8	Cumul. 35.8	.78,	.77
II	20,	52	Management-by-Exception-Passive	6.8	8.4	44.2	.71,	.71
III	30,	54	Management-by-Exception-Active	3.6	4.5	48.7	.75,	.63
IV	67,	75	Charismatic Behavior	1.6	2.0	50.7	.52,	.48
V	19,	59	Individualized Consideration	1.3	1.7	52.4	.48,	.33
VI	17,	37	Intellectual Stimulation	1.3	1.6	54.0	.66,	.48
VII	1,	6	Uninterpretable	1.2	1.5	55.5	.38,	.34
VIII	47,	53	Uninterpretable	1.2	1.5	57.0	.43,	.37
IX	34,	50	Laissez-faire	1.1	1.4	58.4	.65,	.40
X	14,	44	Passive <u>vs.</u> Active Management-by-Exception	1.0	1.3	59.7	.31,	.51
XI	68,	69	Transformational Leadership	1.0	1.3	61.0	.44,	.29

^aTwo items with highest loadings on the factor.

^bBased on the two leadership behavior items with the highest loadings on the factor.

X Passive versus Active Management-by-Exception

Closely monitors my performance for errors (.31)

Shows he is a firm believer in "If it ain't broke, don't fix it" (.51)

XI Transformational Leadership

Talks about how trusting each other can help us to overcome our difficulties (.44)

Focuses on what is essential to consider (.29)

Factors VII and VIII were uninterpretable in terms of the model. The highest factor loadings were low, respectively, .38, .34 and .43, .37.

It can be seen that almost half of the common variance in the MLQ ratings was accounted for by the first factor of inspiration. In addition to an overall management-by-exception factor emerging (Factor X), separate passive and active factors also appeared (Factors II and III). Four transformational components emerged (Factors I, IV, V, and VI) along with a general transformational leadership factor (Factor XI). A contingent reward factor was the only component of the model that failed to appear. Attributed charisma also did not emerge as a unique factor.

The results from the factor analysis of these data provide general support for the measurement of the full-range model. We will, however, use the scale construction validated in earlier research for our analyses. There are three primary reasons for this. First, the earlier scale construction is consistent with our framework, and it is not prudent to revise the model and scales based on one data set. Second, we expect to observe changes in leader behavior over time and to revise our scale construction on this data describing leadership early in the development process does not seem advisable. Third, the sample size relative to the number of items is not sufficiently large to yield a highly reliable factor structure.

Leadership and Management Behavior Survey(LMBS)--Descriptive Statistics. The means, standard deviations and alpha coefficients of reliability for the LMBS data collected from followers are presented in Table 7. All alpha coefficients exceeded .70. Therefore, all LMBS scales can be considered internally consistent.

Focal cadets received the highest average scores on directive management and contingent punishment, and consultative behavior was rated lower than directive behavior. In terms of consistencies with expectations, the physical and mental challenges of the freshman year, and the resulting focal cadet/follower interactions, led us to expect that we would see much more noncontingent punishment than was found in industrial samples by Podsakoff (1987). This was confirmed. In the same way, the pattern of management behaviors observed and rated by Bass et al. (1975) for middle managers was expected to differ from what was seen in leading the freshmen. Consulting with followers was the most popular approach of middle managers; arbitrary direction without reason was rare. We expected to see very little of the former and a great deal of the latter if measures based on our ratings and log entries were valid. Again, our expectations were supported.

Table 7.

Descriptive Statistics for Follower Ratings of Focal Cadets on Leadership and Management Behavior Scales			
Leadership/Management Scale ^a	Follower Rating (n=149)		
	α	M	SD
Noncontingent Reward	.81	2.55	.86
Noncontingent Punishment	.82	2.66	.91
Contingent Punishment	.87	2.91	.94
Directive	.83	2.97	.88
Persuasive	.76	2.69	.78
Consultative	.81	2.72	.79
Participative	.84	2.64	.88
Delegative	.78	2.78	.81
Initiating Structure	.84	2.96	.84
General Consideration	.87	2.93	.79

^aScale item responses ranged from 0 = "Never" to 4 = "Always".

MLQ and LMBS--Interrelationships

Table 8 presents correlations between leadership behaviors of focal cadets as rated by followers on the MLQ, and the leadership and management behaviors (LMBS) of focal cadets rated by a separate group of followers at a different point in time. While we could not conclude that these groups of followers were separate, the method for selecting raters within companies was random for both surveys, and surveys were administered at separate times. It is possible that a rater happened to receive the same named focal cadet on both surveys but the likelihood is low. Table 8 reveals a number of significant relationships in expected directions. For example, transformational leadership was related to delegative, participative and consultative management, but unrelated to contingent punishment and directive management. Laissez-faire leadership was predictably negatively related to directive management, initiating structure and contingent punishment. It is important to note, that because the two sets of ratings were measured at different times, with different instruments and responded to by different raters, the potential for single source bias was greatly reduced. The findings reported in Table 8 are somewhat consistent with what our theory proposes, i.e., transformational leadership is active, not passive, and is associated with more participative management styles. The significant positive relationship of transformational and transactional leadership with noncontingent reward was surprising, but may be indicative of a positive halo effect associated with rewards.

An additional analysis was done on the entire focal cadet group for whom we had survey data. The averaged transformational scale (taken from MLQ survey data) was correlated with the remaining MLQ scores and the LMBS scores. As can be seen from Table 9, those individuals rated as transformational were rated very high on contingent reward. They were also seen as more delegative, more consultative, and more likely to use noncontingent reward. Those rated high on transformational leadership engaged in less passive management-by exception and less laissez-faire leadership. Again, we see support for the framework in that transformational leadership is not passive.

What is important to keep in mind is that the data we have collected on the leadership and management behavior of focal cadets is at a very early stage of the cadets' emergence and development as leaders. As noted above, the observational and log data have tended to be skewed towards certain categories of leadership and managerial behavior with restricted ranges (based on frequency of occurrence) observed in other categories. Thus the present data may reflect a conservative estimate of the true score relationships among these dimensions.

Indirect support for this position comes from results presented by Curphy (1992). Curphy reported that the impact of transformational leadership among cadet leaders on team performance at the Air Force Academy was more evident over an extended period of time. With its emphasis on long-term development, envisioning and developing new ways of thinking, the impact of transformational leadership on unit performance may be incremental and increase over time.

Table 8.

Correlations Among MLQ and LMBS Scale Scores (Follower Ratings)										
Leadership Behavior (MLQ)	NCR	NCP	CP	DIR	PER	CSL	PAR	DEL	INST	GC
Transformational Composite	.23**	.12 ^a	.09	.05	.10	.21**	.16 ^a	.19	.16*	.15*
Attributed Charisma	.23**	.14 ^a	.14 ^a	.15 ^a	.16*	.20**	.18*	.21**	.21**	.20*
Charismatic Behavior	.23**	.12 ^a	.19*	.16*	.15*	.24**	.18*	.21**	.25**	.18*
Inspiration	.20**	.06	.16*	.15*	.15*	.21**	.16*	.22**	.22**	.21**
Intellectual Stimulation	.20**	.12 ^a	-.001	-.04	.10	.18*	.11	.16*	.05	.07
Individualized Consideration	.25**	.14 ^a	.09	.06	.10	.19*	.14*	.14*	.16*	.14*
Contingent Reward	.24**	.11	.07	.02	.08	.18*	.16*	.20**	.12*	.16*
Management-by-Exception-Active	-.04	-.01	.07	.04	.01	-.04	-.18*	-.04	.03	-.00
Management-by-Exception-Passive	-.02	.03	-.09	-.06	-.01	-.05	.01	-.04	.09	.03
Laissez-faire	.04	-.01	-.23**	-.19*	-.08	-.06	.01	-.06	-.25**	-.10

Note. n's ranged from 113 to 121.

Key: (NCR) Noncontingent Reward (PER) Persuasive
 (NCP) Noncontingent Punishment (CSL) Consultative
 (CP) Contingent Punishment (PAR) Participative
 (DIR) Directive (DEL) Delegative

(INST) Initiating Structure
 (GC) General Consideration

^a $p \leq .10$
 * $p \leq .05$
 ** $p \leq .01$

Table 9.

Correlations Between Transformational Leadership as Rated by Followers and Leadership and Management Behaviors	
Leadership Management Behaviors	Followers' Rating of Transformational Leadership
<u>MLQ</u>	
Contingent Reward	.92**
Management by Exception - Active	.13*
Management by Exception - Passive	-.32***
Laissez-faire	-.38***
<u>LMBS</u>	
Noncontingent Reward	.23**
Noncontingent Punishment	.12 ^a
Contingent Punishment	.09
Directive	.05
Persuasive	.10
Consultative	.21**
Participative	.16*
Delegative	.19*
Initiating Structure	.16*
General Consideration	.15 ^a

Note. Transformational is a composite variable made up of charismatic behavior, attributed charisma, individualized consideration, inspiration, and intellectual stimulation; n's for scales where cadets had both MLQ and LMBS scores ranged from 115 to 123.

^a $p \leq .10$

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

The longer we observe the focal cadets, the more likely our distribution of leadership and management behaviors will be representative of the full range of potential behaviors. At the same time, the impact of these behaviors on measures of effectiveness and performance may accrue over time, resulting in stronger predictions of leadership effectiveness. Indeed, the data collection to date about focal cadets, with respect to both predictor and criterion data, is early in their four-year program and may account, in part, for the patterns of relationships observed in Tables 8 and 9.

Survey Measures and Log Entries

An additional means for assessing construct validity is to determine the relationships between two different approaches to measuring the same, or similar constructs. Because the categorical nature of our log entries makes correlational analyses less than optimal, we adopted the following approach for determining convergence between these two methods.

Focal cadets were categorized on the basis of the type of leadership/management behavior described about them in the log entries provided by followers. Cadets who had a specific leadership behavior described about them received a score of 1 for that leadership behavior category; all others who had at least one log entry written about them but no entries in a given category (or group) received a score of 0 for that category. We then tested the differences in means of the focal cadets' survey scores (as reported by followers) on the same or a similar construct to determine if, in fact, those individuals who had one or more instances of behavior described in the logs had higher survey scores on that construct. It is important to note that logs were collected prior to the collection of surveys. Due to the random assignment of focal cadet names to raters, it is likely that the same cadets were not rated by the same raters. Results from these analyses are presented in Table 10.⁹

The first entry was for the categorization of transformational leadership. A score of 1 in the transformational log category resulted if the focal cadet being rated had one or more recorded log entries for any of the four transformational leadership behaviors coded in the logs (i.e., charismatic behavior, inspiration, intellectual stimulation, or

⁹A correlation was computed to determine whether there was a relationship between the number of logs a focal cadet had written about him and the focal cadet's ratings on transformational leadership as reported by his followers. There was no relationship between the number of logs a cadet received and his ratings on transformational leadership. There was, however, a significant negative correlation ($r = -.19$, $p < .01$) between the number of logs a cadet received and his rating on laissez-faire leadership. In other words those who are rated as often avoiding leadership have fewer logs written about them.

individualized consideration). Attributed charisma was coded separately in the logs and occurred very rarely. For this analysis, of the total of 148 cadets analyzed, 124 cadets received a score of 1; 24 received a score of 0. The mean scores on the transformational survey scale (all items measuring the four transformational scales averaged) as rated by followers were then computed for each log group. Those focal cadets who had no transformational entries had a mean transformational survey score of 1.60; those cadets who had one or more transformational log entries had a mean transformational survey score of 2.06. These means differed significantly ($p < .01$).

As can be seen from Table 10, the same pattern of mean differences holds for inspiration, individualized consideration, and contingent reward.¹⁰ The contingent and noncontingent punishment log entry groups were compared on active management-by-exception as well as on contingent and noncontingent punishment. With the exception of the noncontingent punishment category compared with noncontingent punishment survey scores, all means differed significantly and in expected directions. Means also differed significantly and as expected for initiating structure and directive with reason. Not all possible comparisons could be made between survey scales and log categories as there were some log categories with too few entries to make meaningful comparisons (e.g., intellectual stimulation and noncontingent reward).

The pattern of results presented in Table 10 provides evidence that ratings received by focal cadets on the MLQ were more likely due to the behaviors they exhibited than to implicit theories of raters. Specifically, cadets were instructed to describe behaviors on the logs which they had observed in the focal cadet leaders. The fact that these behaviors differentiated between focal cadets on dimensions of leadership measured by the MLQ and the LMBS suggests that the surveys were sensitive to actual differences in how frequently these "behaviors" were exhibited by focal cadet leaders.

These results provide evidence that the two measurement methods reliably assess behavior patterns and consistencies. By using a combination of methods, we may be better able to describe those individuals seen as most transformational across situations, and better able to determine the specific types of behavior they are displaying. Table 11 presents the means on the leadership scales for all cadets who had no logs completed about them by their followers. Because there were no log data on these cadets they could not adequately be compared with the other two groups. The means in Table 11 suggest that these cadets also received rather high

¹⁰These results must be viewed in light of the fact that in many cases the cadets who received log entries describing one type of transformational leadership also had entries for other types of transformational leadership. For example, of the 51 cadets who had inspirational log entries, 40 of them also had instances of individualized consideration written about them. This is not surprising given that transformational leaders tend to use all types of transformational behaviors.

ratings on the transformational scales from the MLQ compared to those with logs but no transformational entries. They did, however, receive lower scores on contingent punishment and initiating structure, suggesting that they were perhaps less involved in the freshmen socialization process. All efforts will be made to gather log data on these individuals in the next year so a more thorough comparison of log and survey data can be made.

Convergent and Discriminant Validity

In order to assess convergent and discriminant validity across rater groups, correlations were computed among the MLQ scales for the three rater groups that completed this survey (i.e., followers, focal cadets' self-ratings, and upper classmen). Due to the high intercorrelations among the transformational scales, (i.e., correlations ranged from .72 to .85) an overall, averaged measure of transformational leadership also was used in this analysis.

Correlations across rater groups are presented in Table 12. The convergent validity between followers and upper classmen on the transformational scale is quite good. The correlations between groups on the active management-by-exception and laissez-faire scales were significant but rather low. The convergent validity coefficients for contingent reward and passive management-by-exception were not significant. The high correlation between followers' ratings of contingent reward and upper class ratings of transformational leadership may be partially explained by the fact that contingent reward behavior was seen by followers infrequently ($M = 1.90$ where 1 = "once in a while" and 2 = "sometimes"). What followers saw as contingent reward, the upper classmen appeared to interpret as transformational. In the current context, the contrast between active positive styles of leadership such as transformational and contingent reward compared to the pervasive use of criticism and punishment may have resulted in these positive forms being seen as more highly correlated. Our experience in coding thousands of log observations would support this position in that our own coders would discuss examples of contingent reward behavior as being signs of individualized consideration. It may also look like consideration when the other styles surrounding it are so punitive. Bass and Avolio (1992) suggested that the high correlation frequently found between transformational and transactional contingent reward leadership may be due to them both being active-positive styles of leadership as well as the fact that recognition for good performance also comprises contingent reward leadership. Such recognition may be interpreted by some raters as individualized consideration.

The pattern of results in Tables 9 and 12 also show symmetry, whether using the same source for raters or different sources. Specifically, symmetry is found in the pattern of correlations between the transformational composite (TF) and CR (.92 vs. .60), MBE-A (.13 vs. .21), MBE-P (-.32 vs. -.23), and LF (-.38 vs. -.20).

Table 10.

Scale	T-tests: Leadership Scales by Log Entry Groups					
	Log Group = 0 ^b n	Log Group = 0 ^b Mean	Log Group = 1 or more ^c n	Log Group = 1 or more ^c Mean	t-Value	df
Transformational Composite (TF) by TF ^d	24	1.60	124	2.06	-2.93**	146
Inspiration (IM) by IM	94	1.90	51	2.32	-3.30**	143
Individualized Consideration (IC) by IC	30	1.55	115	2.00	-3.00**	143
Contingent Reward (CR) by CR	116	1.78	24	2.21	-2.79**	138
Laissez-faire (LF) by LF	137	1.59	4	1.62	-.11	139
Management by Exception-Active (MBEA) by Noncontingent Punishment (NCP)	85	1.98	53	2.22	-2.47**	136
Management by Exception-Active (MBEA) by Contingent Punishment (CP)	79	1.93	48	2.29	-3.73**	125
Contingent Punishment (CP) by CP	66	1.77	43	2.30	-3.26**	107
Noncontingent Punishment (NCP) by NCP	63	1.62	46	1.76	-.77	107
Directive (D)-by Directive No Reason (DIRNR)	60	2.01	49	2.06	-.32	107
Directive (D)-by Directive With Reason (DIRWR)	45	1.85	64	2.16	-2.09*	107
Persuasive (PER) by PER	29	1.61	80	1.76	-1.05	107
Initiating Structure (IS) by IS	92	1.94	17	2.44	-2.23**	107
General Consideration (CON) by CON	27	1.69	80	1.97	-1.49*	105

Note. Transformational is a composite variable made up of charismatic behavior, individualized consideration, inspiration, and intellectual stimulation.

* p ≤ .10
* p ≤ .05
** p ≤ .01
***p ≤ .001

^bLog group = 0 indicates that no log entries occurred in that category for those individuals.

^cLog group = 1 or more indicates that one or more log entries occurred in that category for those individuals.

^dThere was no comparison made for charisma as there were too few log entries in this category.

Table 11.

Means on Leadership Scales by Log Entry Groups for Individuals with No Logs completed About Them		
Scale	n	Mean
Transformational Composite (TF) by TF	55	2.15
Inspiration (IM) by IM	54	2.11
Individualized Consideration (IC) by IC	52	2.16
Contingent Reward (CR) by CR	53	2.01
Laissez-faire (LF) by LF	49	1.55
Management by Exception-Active (MBEA) by Noncontingent Punishment (NCP)	51	1.76
Management by Exception-Active (MBEA) by Contingent Punishment (CP)	51	1.76
Contingent Punishment (CP) by CP	29	1.69
Noncontingent Punishment (NCP) by NCP	28	1.63
Directive (D)-by Directive No Reason (DIRNR)	29	1.90
Directive (D)-by Directive With Reasons (DIRWR)	29	1.90
Persuasive (PER) by PER	29	1.76
Initiating Structure (IS) by IS	29	1.82
General Consideration (CON) by CON	28	1.94

Table 12.

Convergent Validity - Intercorrelation of Multifactor Leadership Questionnaire (MLQ) Scales Across Rater Groups					
	Followers Versus Upper Classmen				
	Upper Classmen				
Followers	TF	CR	MBEA	MBEP	LF
Transformational (TF) ^a	.54***	.07	.05	-.12	-.18*
Contingent Reward (CR)	.60***	.07	.03	-.16	-.20*
Management-by-Exception-Active (MBEA)	.21**	.04	.20*	-.09	-.08
Management-by-Exception-Passive (MBEP)	-.23**	-.04	-.23	-.03	.10
Laissez-faire (LF)	-.20**	.00	-.13	.05	.21*
Focal Cadets Versus Upper Classmen					
Upper Classmen					
Focal Cadets	TF	CR	MBEA	MBEP	LF
Transformational (TF) ^a	-.03	-.03	-.04	-.12	-.09
Contingent Reward (CR)	-.17	-.18	-.17	-.05	-.04
Management-by-Exception-Active (MBEA)	-.05	.01	.04	.11	.04
Management-by-Exception-Passive (MBEP)	.01	.07	.04	.06	.10
Laissez-faire (LF)	-.04	-.03	-.03	.12	.14
Focal Cadets Versus Followers					
Followers					
Focal Cadets	TF	CR	MBEA	MBEP	LF
Transformational (TF) ^a	.02	.00	.05	-.01	-.04
Contingent Reward (CR)	.00	-.05	.08	-.00	.04
Management-by-Exception-Active (MBEA)	-.01	-.05	.10	-.09	-.09
Management-by-Exception-Passive (MBEP)	-.05	.08	-.06	.01	.10
Laissez-faire (LF)	.07	-.09	-.03	-.06	.01

^aA Transformational score was created by averaging responses to the five transformational scales (i.e. individual consideration, charismatic behavior, attributed charisma, inspiration, and intellectual stimulation).

Note. N's ranged from 109 to 213.

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

The lack of correlation of followers or upper class ratings with focal cadet self-ratings was not surprising in that MLQ self-ratings have been consistently found to be highly biased (Yammarino & Bass, 1989). Consistent with conclusions offered by Harris and Schaubroeck (1988), neither followers nor upper classmen perceived the focal cadets' leadership the same way the self-raters did. The biases may be explained in part by the recent findings of Atwater and Yammarino (1992) who classified self-raters into three groups when comparing self- and other ratings: over-estimators, accurate estimators and under-estimators. Over-estimators are self-raters whose self-ratings are inflated relative to others' ratings; accurate estimators are those whose self-ratings are similar to others' ratings; and under-estimators are those whose self-ratings are deflated relative to others' ratings. These three self-rating styles occur for a variety of reasons including personality characteristics and past experiences of the rater. These three self-rating styles may have obscured the convergent validity between self and other ratings.

In interpreting the findings for convergent and discriminant validity, one must keep in mind that the survey data were completed by different groups at different times. The fact that followers and upper classmen agreed to a large extent about transformational leadership behavior is encouraging, and suggests that we can reliably and accurately identify those individuals who more frequently display transformational leadership.

Observations

The most frequent types of behavior observed were inspirational/charismatic (141 instances) and directive with reason (171 instances). The least frequent behaviors observed were noncontingent reward and noncontingent punishment (31 and 33 instances respectively). A visual inspection of the observations obtained in "company room training" and "Rat Challenge" was made to compare the two situations. "Rat Challenge" is supposed to emphasize only positive leadership; "company room training" allows cadet officers (including cadet corporals) to control the atmosphere of the training period.

It appeared from the data that leadership in "Rat Challenge" was positive. Only one behavior was recorded as demonstrating noncontingent punishment to a great extent. A number of behaviors in "Rat Challenge" were recorded as inspirational, intellectually stimulating, individually considerate or contingent reward. During "company room training", on the other hand, both transformational (e.g. intellectual stimulation and individualized consideration) as well as punishment behaviors were recorded as occurring to a greater extent. Given the types of situations observed, i.e., those where instruction, direction, or motivation were called for, these findings are not surprising. Because so few focal cadets were observed in a limited number of situations, no further analyses were performed on this data. When additional, more

complete data are collected during the third year of the study, it may be possible to look at the convergence between observations and other methods.

CRITERION-RELATED VALIDITY—METHODS

Criterion-related validity is studied by comparing measures or scores with one or more criteria known or believed to be associated with the behavior under study. In other words, we ask to what extent measures of leader behavior predict or relate to criteria with which they are expected to predict or relate. In the case of leader behavior, there is no objective criterion against which measures may be validated. This is usually the case in social science research, and one must make predictions based on theory and past research as to criteria that may be useful for validation.

In order to assess criterion-related validity, we (1) computed correlations between MLQ and LMBS scores collected from focal cadets, upper classmen, and freshmen to peer ratings; (2) correlated MLQ scores collected from freshmen to ratings of extra effort in order to measure the concurrent validity of the MLQ; and (3) conducted statistical tests of the differences between cadet corporals and non-corporals on MLQ and LMBS scores. As noted earlier, we hypothesized that focal cadets rated higher on transformational leadership would receive higher peer ratings, higher ratings of extra effort from followers, and would have achieved higher rank in the cadet rank structure.

Peer Rankings

Peer rankings were collected as indicators of each focal cadet's effectiveness as a leader during the Spring semester of Year 2. Each focal cadet was ranked by each other focal cadet in his company. Focal cadets selected the top five most effective leaders among their peers in their company and the bottom five, least effective leaders among their peers. They selected the top and bottom five from a list of names of all focal cadets in their company. Based on the number of times a cadet was ranked first, second, ... twenty fifth, twenty sixth, etc. a score was computed for each cadet. The scoring procedure for creating individual peer ranking scores for each focal cadet is described in Appendix E.

Extra Effort

As described earlier, extra effort was measured by three items included on the MLQ. The analyses described below were performed using follower ratings of extra effort.

Attaining the Rank of Cadet Corporal

As third class (sophomore) cadets, the members of the focal group became eligible to be selected to hold rank within the Cadet Corps. The highest rank attainable as a third class cadet is that of cadet corporal. Each company, of which there are ten, has a total of nine corporals as squad leaders. One hundred twenty-six (44%) of the focal cadets attained the rank of corporal during the second year. The primary function of the cadet corporal is the accountability and administrative status of the cadets in his squad. Corporals are selected on the basis of academic, military, and peer evaluations conducted at various intervals during their freshmen year. From the nine selected corporals, the top three are designated as cadre corporals. Cadre corporals assist the first and second class cadet officers in training the incoming freshmen. In this role, the corporals are utilized as demonstrators and small group instructors as directed by the upper class cadet officers. The position of corporal provides an initial exposure to the leadership functions within the cadet rank structure and within the structure of the class system. For purposes of analyses, individuals who served as corporals were given a code of 1; those who did not serve as corporals received a code of 0.

CRITERION-RELATED VALIDITY—RESULTS AND DISCUSSION

Peer Rankings--Relationship to Leadership Behaviors

In this study, peer rankings of leadership provided a very useful criterion measure of leadership effectiveness. Peer rankings have been found to be one of the best measures of leader effectiveness and potential leader success (Hollander, 1954; and in personal communication, May, 1993; Kane & Lawler, 1978). Both theory and past research would suggest that transformational leader behaviors would be highly positively related to peer rankings of leader effectiveness. Transactional behaviors would also be positively related; but to a lesser extent, active management-by-exception would be positively related in a military context such as VMI; and passive behaviors would be negatively related to effectiveness.

Table 13 presents the correlations between the leadership and management behaviors (MLQ and LMBS) and the peer ranking (effectiveness) scores. Upper class transformational leadership ratings were highly correlated with the effectiveness scores; transactional scores were positively related, but somewhat less so; active management-by-exception was positively related; and passive and laissez-faire leadership were negatively related to effectiveness. The patterns among the predictors for this group fit well with predictions.

Clearly, the leader/follower interactions between freshmen and upper class cadets are not ordinary. Little such consulting appeared and it was not related to peer rankings of effectiveness. Rather, the leadership roles demanded of the focal cadets in this setting required them to provide more direction, and to a lesser extent, persuasion and delegation. We expect to see a shift in these styles in the next two years as the focal cadets assume leadership roles leading the Corps of Cadets and are not as directly involved in the socialization activities associated with freshmen.

The self-ratings in this study were unrelated to effectiveness. This was not particularly surprising in that self-ratings have generally been found to be unreliable indicators of behavior, and unrelated to ratings provided by others (see Harris & Schaubroeck, 1988).

The lack of a relationship between follower ratings of transformational leadership and peer rankings was unexpected. As described earlier, this may be because followers have not yet observed much transformational leadership. Another explanation for these findings is that peers (sophomores) doing the rankings and freshmen doing the leader behavior ratings have different perspectives on what constitutes effective leadership. Foti (1990) as well as Atwater and Yammarino (1993) have demonstrated that superiors' and subordinates' expectations of leader behavior differ. Behavior rated by peers (sophomores) is more highly related to effectiveness as rated by other upper classmen (juniors and seniors who are more likely to share expectations of effective leadership) than it is to behavior as rated by followers (freshmen). As predicted, the relationships between follower ratings of active management-by-exception and effectiveness were positive, and relationships with passive and laissez-faire leadership were negative.

Extra Effort--Relationships with MLQ Scales

Fundamental to transformational leadership is the impact transformational leadership has on the follower's extra effort, resulting in "performance beyond expectations" (Bass, 1985). Average effort associated with transactional leadership is augmented in the model by transformational leadership. As noted before, three items in MLQ Form 5X did not deal with a leader's behavior, but rather the follower's ratings of his leader's impact on the extra effort of the follower. These items were not directly about the leader's behavior but how the followers felt as a consequence. The three items of extra effort rated by followers were: "Motivates me to do more than I thought I could do," "Heightens my motivation to succeed" and "Gets me to do more than I expected I could do." These three items formed a reliable cluster with an alpha coefficient of .82.

Table 13.

Correlations Between Leadership/Management Behaviors and Peer Rankings			
Leadership/Management	Peer Rankings		
	Followers' Ratings of Focal Cadets	Self-Ratings by Focal Cadets	Upper Class Ratings of Focal Cadets
<u>MLQ</u>			
Attributed Charisma	.13	-.07	.44***
Charismatic Behavior	.15*	.06	.41***
Inspiration	.14*	.02	.41***
Intellectual Stimulation	-.03	.06	.32***
Individualized Consideration	-.05	.08	.32***
Contingent Reward	.04	.09	.23**
Management by Exception-Active	.43***	-.05	.24**
Management by Exception-Passive	-.22**	.04	-.21**
Laissez-faire	-.23**	.03	-.27*
<u>LMBS</u>	(n=129-132)		
Noncontingent Reward	.11		
Noncontingent Punishment	-.04		
Contingent Punishment	.15		
Directive	.33***		
Persuasive	.19*	N/A	N/A
Consultative	.12		
Participative	.09		
Delegative	.19*		
Initiating Structure	.30***		
General Consideration	.21**		

* p < .05
 ** p ≤ .01
 *** p ≤ .001

Results conformed to a considerable degree to theoretical expectations (Bass, 1985). As can be seen in Table 14, all of the transformational scales correlated .60 or above with the three extra effort items. Inspiration was relatively highest in correlation with extra effort (.73, .72, .70); followed closely by charismatic behavior (.68, .71, and .63); individualized consideration (.68, .71 and .63); and attributed charisma (.67, .69 and .66).

Because contingent reward is an aspect of transactional leadership which is not expected to correlate with effectiveness as highly as transformational leadership, it was expected that the correlations of extra effort and contingent reward would be somewhat lower than those between extra effort and transformational leadership. However, contingent reward appeared to have the same perceived impact on extra effort as did the transformational behaviors $r's = (.68, .65, .66)$.

Active management-by-exception was expected to contribute somewhat to extra effort. Here, as expected, correlations were .12, .09 and .22. Some positive effects appeared, particularly for "Getting me to do more than I expected I could do".

The remaining results were consistent with theoretical expectations about passive leadership--the correlations between extra effort and passive management-by-exception were -.31, -.29 and -.30. The correlations between extra effort and laissez-faire leadership were -.32, and -.33 and -.34.

In general, the findings concerning relationships with extra effort were consistent with theoretical expectations. We therefore concluded that concurrent validity was supported by these results.

Leadership Behaviors of Cadet Corporals and Non-Corporals

Another early criterion measure that was used to assess the validity of the MLQ and LMBS was whether the focal cadets were appointed to the position of cadet corporal. Results comparing the mean differences in MLQ and LMBS ratings provided by followers and upper classmen for non-corporals and corporals are presented in Table 15.

The results suggested that followers perceived different behaviors on the part of cadet corporals and non-corporals. Specifically, followers rated the corporals higher on active management-by-exception, directive leadership, initiating structure and contingent punishment. They also viewed the corporals as less individually considerate, while being somewhat more considerate to the group.

Table 14.

Relationships Between Follower Ratings of Focal Cadets on MLQ Leadership Scales and Extra Effort			
	Extra Effort Item		
	Motivates me to do more than I thought I could do	He heightens my motivation to succeed	Gets me to do more than I expected I could do
Factors			
Transformational Leadership			
Attributed Charisma	.67**	.69**	.66**
Charismatic Behavior	.68**	.71**	.63**
Inspiration	.73**	.72**	.70**
Intellectual Stimulation	.68**	.60**	.61**
Individualized Consideration	.68**	.71**	.63**
Transactional Leadership			
Contingent Reward	.68**	.65**	.66**
Management-by-Exception-Active	.12	.09	.22**
Management-by-Exception-Passive	-.31**	-.29**	-.30**
Non-Leadership			
Laissez-faire	-.32**	-.33**	-.34**

**p < .01

Table 15.

T-tests: Leadership and Management Scales for Cadet Corporals and Non-Corporals: Follower and Upper Class Ratings						
Follower Ratings of Leader/ Management Behavior	NON-CORPORALS		CORPORALS		t-Value	df
	n	Mean	n	Mean		
<u>MLQ</u>						
Attributed Charisma	113	2.34	103	2.20	1.38	214
Charismatic Behavior	109	2.05	99	2.04	.10	206
Inspiration	114	2.11	102	2.04	.70	214
Intellectual Stimulation	109	1.96	101	1.79	1.92 ^a	208
Individualized Consideration	112	2.11	102	1.84	2.69 ^{**}	212
Contingent Reward	107	1.96	101	1.84	1.25	206
Management-by-Exception-Active	106	1.78	99	2.17	-5.49 ^{**}	203
Management-by-Exception-Passive	105	1.74	99	1.71	.36	202
Laissez-faire	107	1.58	100	1.53	.59	205
<u>LMBS</u>						
Noncontingent Reward	67	1.51	76	1.59	-.52	141
Noncontingent Punishment	67	1.71	78	1.61	.67	143
Contingent Punishment	68	1.69	78	2.08	-2.66 ^{**}	144
Directive	68	1.74	78	2.15	-2.91 ^{**}	144
Persuasive	68	1.57	78	1.79	-1.75 ^a	144
Consultative	68	1.62	78	1.79	-1.29	144
Participative	68	1.53	78	1.72	-1.34	144
Delegative	68	1.68	78	1.86	-1.41	144
Initiating Structure	68	1.79	78	2.11	-2.22 [*]	144
General Consideration	66	1.72	77	2.00	-1.84 ^a	141
Upper Class Ratings of Leader/Management Behavior	NON-CORPORALS		CORPORALS		t-Value	df
	n	Mean	n	Mean		
<u>MLQ</u>						
Attributed Charisma	89	2.18	79	2.54	-2.62 ^{**}	166
Charismatic Behavior	86	1.98	75	2.27	-2.48 ^{**}	159
Inspiration	83	2.07	74	2.48	-3.11 ^{**}	155
Intellectual Stimulation	81	1.89	67	2.14	-1.94 ^a	146
Individualized Consideration	81	1.94	71	2.30	-2.64 ^{**}	150
Contingent Reward	79	1.85	66	2.12	-1.89 ^a	143
Management-by-Exception-Active	77	1.73	67	1.99	-2.32 [*]	142
Management-by-Exception-Passive	80	1.80	69	1.80	-.07	147
Laissez-faire	88	1.73	76	1.61	.93	162

^a p < .10

* p < .05

** p < .01

The pattern of ratings for the upper classmen rating cadet corporals and non-corporals was quite different than the followers' ratings. Specifically, upper classmen rated those focal cadets who eventually became cadet corporals as being more inspirational, individually considerate, charismatic, possessing greater attributed charisma, using contingent reward more frequently, while also using more active management-by-exception. Differences in ratings of intellectual stimulation were marginally significant. When comparing these relationships with the correlations between peer rankings and survey scores, both sets of data indicate that ratings of "effective" focal cadets were markedly different depending on the vantage point of the rater. Followers see both cadet corporals and those with the highest peer rankings as directive and actively managing-by-exception. Upper classmen see cadet corporals and those with the highest peer rankings as transformational. It is possible that the leadership behaviors exhibited by the focal cadets varied depending on the group with whom they were interacting (i.e., followers versus upper class), or that the followers and upper classmen had different implicit models of "successful" leadership that impacted their leadership and management behavior ratings.

As noted earlier, the correspondence between log observations and survey ratings of leadership indicates that the differences in ratings observed here are likely due, at least to some extent, to the variations in behavior that were observed by the different rater groups. Again, we expect that over time, as focal cadets expand their range of leadership behaviors exhibited with followers, follower ratings of transformational and constructive transactional leadership will become more similar to those provided by upper classmen.

Identifying Transformational Leaders

One of the purposes of this longitudinal study is to examine the process by which transformational leaders develop and emerge. In this vein, it is necessary to be able to reliably identify those leaders who are more transformational and distinguish them from those who are less transformational. It is also necessary to determine the types of behaviors in which transformational leaders engage which distinguish them from the less transformational leaders.

Using follower survey ratings on the MLQ and follower log entries, we identified the 46 most transformational and 15 least transformational leaders from those 148 (of 286) focal cadets on whom we had both log and MLQ data. This analysis is very preliminary in that it represents leadership of less than half of the cadets in our sample of 148, and it represents the cadet's behavior in the earliest stages of leadership development, i.e., his first cadet leadership experience. While preliminary, these analyses permitted an early examination of the validity of this approach.

The 46 most transformational leaders were those who had transformational leadership scores on the MLQ that were at least one-half a standard deviation above the mean and who had at least one transformational log entry. The 15 nontransformational leaders were those who had transformational MLQ scores below the mean and who had no transformational log entries.^{11,12} The peer ranking scores for these two extreme groups were compared. The average peer ranking score for the highly transformational leaders was higher than that for the least transformational leaders (Z scores = .456 vs. .215). While this difference was not statistically significant (possibly due to the small sample size for the least transformational group), the difference was in the expected direction.

Appendix F presents a sample of the log entries provided by followers exemplifying the types of behaviors these two groups reportedly displayed. The transformational behaviors are indicative of the types of transformational behaviors in which these cadets engaged. The nontransformational behaviors are indicative of the types of behaviors the least transformational cadets in this group displayed. The differences in critical incident behaviors observed between these two extreme groups were consistent with the differences in leadership ratings. While these data do not provide direct support for the validity of leadership measures, they are indicative of the specific types of behaviors observed by followers.

CONCLUSIONS AND IMPLICATIONS

Conclusions

The content, construct and criterion-related validity of leader behavior measures was investigated in this study. In general, adequate validity was demonstrated for use in this longitudinal study of leadership development and emergence.

With respect to content validity, we found support for our full range model of leadership by conducting observations, collecting critical incidents from focal cadets, from interviewing cadets, and from a retrospective leadership survey completed by focal cadets at the end of their freshman year. Based on our first-year findings, we added several additional leadership and management dimensions to our leadership

¹¹Only a small group of individuals fit the multiple criteria of having both MLQ data and log data, low MLQ transformational scores and no transformational log entries.

¹²While the data available only allow for tentative group assignments, with additional and more complete data, those with the highest ratings and most transformational log entries can be more reliably placed into most and least transformational groupings.

model (such as noncontingent punishment). Since critical incidents were also collected from focal cadets during their second year at VMI, we will compare these critical incidents to those collected during the first year and determine if early leadership experiences influenced leadership emergence and effectiveness during the second year.

To examine construct validity, we assessed the ways in which measures related to one another, whether or not these relationships were similar to those found in other samples, and whether results were consistent with our hypotheses and expectations given the VMI context. We found that the physical and mental challenges of the freshman year was reflected in more reported incidents of noncontingent and contingent punishment than constructive transactional or transformational leadership when freshmen cadets rated focal cadets. Focal cadets were also rated as more directive than nondirective but, given the more dependent relationship between focal cadets and freshmen, as exhibiting more individualized consideration. Perhaps, this is not that surprising given the experiences reported by focal cadets themselves during their first year and their role in the new cadet socialization process as cadet corporals during their sophomore year. With the exception of individualized consideration, very few transformational leadership incidents were reported in the logs by followers. Upper classmen, on the other hand, seemed to feel that the focal group was exhibiting somewhat more transformational leadership than did followers. Congruence across methods about the leadership behavior displayed by focal cadets was obtained. Finally, survey data collected from cadets showed similar patterns to data collected from other military samples, i.e., more active than passive leadership.

It is important to recognize the influence of contextual factors and the fact that focal cadets were in early stages of leadership development. For example, more transformational leadership was reported, and or observed, in the "Rat Challenge" training program and in the FTX context than in the indoctrination context. With respect to developmental factors, we have emphasized throughout this report that focal cadets were at a very early stage in the leader development process, and may have had limited opportunities to perform in formal leadership roles. Indeed, the responsibilities associated with the role of a cadet corporal are limited as upper class cadets strongly influence this responsibility. As the focal cadets develop and advance within the cadet military structure, as well as in other settings, we anticipate changes in their leadership and management behaviors as perceived by followers. The longer we study the focal cadets, the more likely that their behaviors will be representative of the full range of potential leadership.

With respect to criterion-related validity, we hypothesized that transformational leaders would receive higher peer rating scores, higher follower ratings of extra effort, and would be more likely to achieve the rank of cadet corporal. These hypotheses

received support. Survey ratings of leadership (including a composite measure of transformational leadership) provided by upper class cadets generally correlated as predicted with peer rankings of leader effectiveness and with attaining cadet rank. Follower ratings of transformational leadership, however, were uncorrelated with either criterion measure. This is likely due to the nature of leader/follower interactions (e.g., many incidents of punishment) that occur in the physically and mentally challenging activities of the freshman year. In addition, and as predicted, passive management-by-exception and laissez-faire leadership were negatively related to peer rankings and to attaining cadet rank.

As hypothesized, self-ratings of leadership were higher than follower or upper class ratings and were unrelated to others' ratings of leadership and unrelated to peer rankings of effectiveness. This was anticipated due to the unreliability often found when using self-ratings.

An additional finding of interest was the applicability of the leadership framework used in this study to measure leadership in a military setting. The vast majority of leadership behaviors recorded in the logs could be categorized using the framework employed here. Also, the leadership log methodology captured the qualitative nature of behavior, which could not have been obtained with surveys alone.

Implications

The implications for future data collection, both for the continuation of this research and for other researchers, include the following.

Regarding survey data, we have learned that surveys must be administered in a way that insures higher levels of compliance and more complete data. To reduce the amount of spurious data obtained next year, we are intensifying our efforts to brief participants about the benefits of the study and the importance of their active participation. To improve accountability and maintain anonymity, participants will be asked to insert their anonymously-completed surveys into signed, and sealed envelopes. We also will incorporate a "reliability scale" into our survey measures by including duplicate items to detect those respondents who have failed to read or attend to the questions in a conscientious manner. Surveys that show inconsistent data may then either be re-administered or discarded.

With respect to the log data, the entries provided a rich source of leadership data. However, training coders and using pairs of coders to code large numbers of entries is very time-consuming. We believe the richness of the data justify the effort, but it is time and labor intensive. It is also important to recognize that the logs are retrospective in that they ask individuals to recall previous events and are thus subject to biases associated with recall.

The logs also are subject to "visibility" bias in that more incidents of leadership are recalled about those who are more actively participating in formal leadership roles. This information (i.e., the number of logs completed about each focal cadet) will be used in the future as part of a "visibility" or "activity" index. This index may be used as a variable or covariate in future analyses.

Observational data was of limited value in this study as a measure of leadership primarily because it was not possible to observe the majority of focal cadets in a variety of situations. The observations did, however, help to assure us that the framework was adequate for measuring leadership and that leadership behavior could actually be observed among our focal cadets. For the method to prove useful as a measurement device, it must be done more systematically and more comprehensively (i.e., more cadets observed in more situations). We hope to have increased observational opportunities as the focal cadets assume more formal leadership roles. We do recognize, however, that data will be sporadic and may have to be treated as such.

As we continue to collect leadership behavior data, we believe the reliability and validity of our instruments as well as the qualitative nature of the logs and observations will allow us to accomplish the following:

- 1) Identify changes in leadership behavior, i.e., those who emerge as transformational who were not identified in the first year, or those who become less transformational as time goes on.
- 2) Identify profiles of leader behavior, i.e., those who display both transformational behaviors and transactional behaviors (including reinforcement behaviors), those who are exclusively transformational, transactional, or laissez-faire.
- 3) Identify the specific leader and managerial behaviors that are displayed by transformational leaders in later stages of leader development.
- 4) Test the factor structure of the MLQ Form 5X with additional survey data.
- 5) Track groups of the most and least transformational leaders over time to assess the types of leadership positions they assume, and their success as leaders.
- 6) Identify the patterns of individual and experiential data that characterize effective and ineffective leaders.
- 7) Determine the specific behaviors associated with assessments of effectiveness by those in positions senior to and subordinate to the leaders.

In sum, the first two years of leadership behavior data have been valuable in testing our framework and our measures for reliability and validity and in providing a baseline from which to assess the development of leadership in the ensuing years.

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APPENDIX A

LEADERSHIP LOGS: CATEGORIZATION

A categorization scheme was developed that included the leadership and managerial behaviors included in the framework. For each entry (incident) in the leadership logs, there were two raters that coded the behaviors and actions comprising the entry. Each rater who coded leadership behavior from the logs underwent extensive training. Prior to coding any leadership logs, each student rater reviewed the research proposal and relevant readings on the framework of leadership being examined in the current study. Then, a sample of 25 logs, representative of the total group collected, were coded and discussed. This particular sample of logs has become the basis for training all subsequent raters. Specifically, after two teams of raters (total of 4 raters) coded the sample of logs, the logs were discussed with the principal investigators until there was 100 percent agreement on each entry for all rating categories. (Individual logs often contain multiple entries.) All new raters who have been trained, must have produced scores that were in 100 percent agreement with these base scores.

Each rater has been responsible for reviewing the material included in "An Instruction Guide for Scoring Leadership Logs" (See Lau, et al. 1993). After reviewing the guide and scoring scheme, any questions the raters had on the material contained in the guide were discussed with the principal investigators at weekly meetings.

Next, raters were given a sample of 25 logs to code with a partner, who was responsible for coding the same logs. The 25 logs were coded separately, then the two raters convened to compute agreement levels prior to discussion, after which they attempted to resolve discrepancies. Agreement levels are again computed based on the team's consensus. Any remaining discrepancies were referred to the principal investigators for resolution at weekly meetings.

The average pre-discussion agreement levels among our team of coders for freshman log observations of focal cadets (pre-discussion) was as follows for each of the respective categories: Leadership behavior 70%; attributed charisma 82%; initiating structure and consideration 71%; management behavior 60%; and follower reactions 91%. Post-discussion agreement levels for all categories were minimally 99% for leadership behavior and 100% for follower reactions. For the upper class cadets' log observations the following agreement levels across the teams of coders for pre- and post- discussion were observed: Leadership behavior 74%; attributed charisma 92%; initiating structure and consideration 75%; management behavior 80%; and follower response 87%. Post-discussion agreement levels were similar to the freshman in that the lowest agreement level for any of the five categories was 99%.

APPENDIX B

DEFINITIONS OF LEADERSHIP AND MANAGEMENT BEHAVIORS

Transformational Leadership

- a. **Charismatic Behavior** - Focuses on creating a sense of purpose for followers, reiterating important values and beliefs. Displays confidence in the strategy or vision being pursued. Is a role model of exemplary behavior. The leader publicly takes full responsibility for actions and decisions. Explains how followers can obtain shared ideals.
- b. **Attributed Charisma** - Defined in terms of followers' reactions to the leader. The leader is described by followers as someone who is respected, admired and can be trusted. The leader is someone that followers want to be like or to emulate. Followers express faith in the leader and describe the leader as someone willing to share the "limelight".
- c. **Inspiration** - Provides symbols and simplified emotional appeals to increase awareness and understanding of mutually desired goals.
- d. **Intellectual Stimulation** - Used to encourage followers to question their old ways of doing things or to break with the past. Followers are supported for questioning their own values, beliefs, and expectations, as well as those of the leader and organization. Followers are also supported for thinking on their own, addressing challenges.
- e. **Individualized Consideration** - Followers are treated on a one-to-one basis. Individual needs are recognized. With individualized consideration, assignments are often made to followers to provide learning opportunities. The leader works to develop followers to higher levels of potential.

Transactional-Constructive Leadership

- a. **Contingent Reward** - Involves an interaction between leader and follower that emphasizes an exchange (e.g., the leader promises or provides appropriate rewards--mainly material--when followers meet agreed-upon objectives). Emphasis is on facilitating the achievement of agreed-upon objectives by followers.

Transactional-Corrective Leadership

- a. Contingent Punishment - Contingent punishment may take several forms when an individual fails to live up to expectations, or deviates from norms or agreed-upon standards. Being told of one's failure to meet standards may be sufficient to provide aversive reinforcement. The leader may administer punishment or there may be loss of support from the leader. Punishment may also take the form of correction, criticism, or negative feedback.
- b. Active-Management-by-Exception - The leader selectively attends to deviations from standards attempting to correct problems before they arise. The leader searches for errors, is alert to mistakes and enforce rules. These leaders arrange to know if something has gone wrong and may teach followers how to correct mistakes.
- c. Passive-Management-by-Exception - Has a wide acceptance range for deviations from what are correct procedures and process. Generally, is less effective in monitoring follower performance, in that the leader waits for a mistake to occur before taking any action. Only when absolutely necessary will the leader point out to followers what went wrong. Avoids changes in the process, unless they are absolutely necessary.

Nontransactional Leadership

- a. Noncontingent Reward - The basis of noncontingent reward is that the acts of reward are not tied to specific behaviors/actions or levels of performance. It does not appear to make any difference how the person performed, they still receive a reward from their leader.
- b. Noncontingent Punishment - The basis of noncontingent punishment is that the acts of punishment by the leader appear to be arbitrary in that they are dealt out without provocation. One cannot link reprimands or punishment to a specific behavior, action and/or level of performance. Here the leader confronts followers in a negative way regardless of how they are doing. The follower never really knows when he will be punished.
- c. Laissez-faire - Indicates the absence of leadership, the avoidance of intervention, or both. With laissez-faire (Avoiding) leadership, there are generally neither transactions nor agreements with followers (i.e., positive or negative). Decisions are often delayed; feedback, rewards, and involvement are absent; and there is no attempt to motivate followers or to recognize and satisfy their needs.

Initiating Structure/General Consideration¹³

- a. Initiating Structure - The leader's behavior has a clear task emphasis. Behaviors of this type usually involve providing directions, coordinating work, or attempting to motivate or push workers to greater effort.
- b. General Consideration - The leader's behavior is person-oriented and has to do with the interpersonal relations in the work groups. Consideration behavior usually involves support for the group and group members, and a general consideration for workers' feelings.

Management Behaviors

- a. Directive - (No Reason) - The leader orders followers to comply with a particular directive order providing no reason for the order. Simply, the leader gives an order and expects compliance without question or explanation.
- b. Directive - (With Reasons) - The leader orders followers to comply with a directive, while also providing some reasons and/or rationale to explain the directive. The explanation can encompass the purpose of the directive, why they have been chosen, what the intended goal is, how their efforts will help, etc.
- c. Persuasive - Not an order; not telling - The leader attempts to convince the follower to behave or think as the leader suggests.
- d. Consultative - The leader seeks information from followers prior to making and communicating his decision. Followers are given the opportunity as well as possibly encouraged to offer information, opinions, or reservations regarding a particular decision the leader wishes to make or pursue. Ultimately, the leader then makes the decision after receiving the desired input.
- e. Participative - The leader involves followers in the decision making process by seeking their advice and information pertinent to the decision. The leader and his followers work together to produce a decision. In contrast with "Consultative," the leader and his followers jointly arrive at a decision.

¹³Initiating structure and general consideration were coded separately in the logs as they were considered to capture all relevant behaviors in earlier models of leadership (Stodgill & Coons, 1957) and might have overlapped with the other leadership behaviors. In our framework, however, initiating structure is considered an aspect of constructive transactional leadership and general consideration is considered an aspect of nontransactional leadership.

f. Delegative - The leader provides followers with the authority to make the decision on their own. Followers are given total responsibility to make the decision.

APPENDIX C

RETROSPECTIVE LEADERSHIP INVENTORY

Please use the following scale to indicate the frequency with which the leaders you interacted (e.g., brother rats, upper classmen, regimental officers, class officers), overall, acted in each of the following ways. Record the appropriate answer on the blue answer sheet.

- 1 = Not at all
- 2 = Once in a while
- 3 = Sometimes
- 4 = Fairly often
- 5 = Frequently, if not always

1. Avoided Leadership--Leaders made no attempt to motivate you or to recognize or satisfy your needs. Decisions by leaders were delayed; feedback, punishment and rewards were absent. There was little or no interaction between you and the leaders.
2. Arbitrarily Punished--Leaders punished you regardless of how you performed or behaved, and you never really knew when you would be punished.
3. Contingently Punished--Leaders punished you when you did not live up to the leaders' expectations, when you violated a rule, or when you did not perform well. When you were being punished you knew why, and may have even anticipated it.
4. Contingently Rewarded--Leaders rewarded you for doing a good job, or for accomplishing a goal.
5. Noncontingently Rewarded--Leaders complimented you, or rewarded you regardless of how well you had done.
6. Individually Considerate--Your needs were recognized by leaders, and you were treated as an individual, rather than just as a member of a group. Leaders were obviously interested in developing you to be the best you can be.
7. Intellectually Stimulating--Leaders supported you for thinking on your own, and encouraged you to come up with creative solutions to problems.
8. Inspirational--Leaders provided a lot of encouragement, were enthusiastic about what needed to be done, and expressed confidence in you.

9. Charismatic--Leaders made personal sacrifices for others, and emphasized the importance of key values and ideals. Leaders were highly respected and served as role models of the kind of leader you want to be.
10. Arbitrarily Directive--Leaders told you what to do, and/or how to do it but gave no reasons. Leaders scheduled work, set deadlines, specified standards with no explanation.
11. Directive With Reason--Leaders told you what to do and/or how to do it but also told you why. Leaders indicated what was expected; assigned tasks with reasons for assignment; explained the rules.
12. Persuasive--Leaders sold you on what needed to be done and/or how to do it. They explained why rules were beneficial, why your compliance was necessary, and provided information to support their positions.
13. Consultative--Leaders asked your opinion before they decided what needed to be done and/or how to do it. They talked things over with you and other followers before taking actions.
14. Participative--What you needed to do and how to do it were based on reaching agreement between the leaders and followers. The leaders worked with followers to reach solutions to problems.
15. Delegative--Leaders told you what needed to be done but let you and/or other followers decide the way you needed to do it. They set general guidelines but let you and other followers carry out the details as you saw fit.

APPENDIX D - **OBSERVATIONAL CHECKLIST**

BEHAVIOR CHECKLIST

Your Name: _____

Name of Person Observed: First (Please Print) Last _____ Company _____

ID of Person Observed: _____

Activity Observed: _____

(Describe on back)

Based on your 5 minute observation, please rate the leader's behavior and follower's reaction for EACH of the four categories.

Rate the extent to which the leader engaged in each category you observed. If you did not observe that type of behavior, leave blank.

4. To a very large extent.
3. To a large extent.
2. To some extent.
1. To a small extent.
0. Not at all.

LEADERSHIP BEHAVIOR

	To a very large extent	To a large extent	To some extent	To a small extent	Not at all
Inspirational/Charismatic	4	3	2	1	0
Intellectual Stimulation					
Individualized Consideration					
Contingent Reward					
Non-Contingent Reward					
Contingent Punishment					
Non-Contingent Punishment					
Laissez-Faire					
Can't Say					

Rate
MANAGEMENT STYLE

	To a very large extent	To a large extent	To some extent	To a small extent	Not at all
Directive-No Reason	4	3	2	1	0
Directive-With Reason					
Persuasive					
Consultative/Participative					
Delegative					
Can't Say/Non Management					

Rate

INITIATION OF STRUCTURE
CONSIDERATION

	To a very large extent	To a large extent	To some extent	To a small extent	Not at all
Initiation of Structure	4	3	2	1	0
Consideration					
Both					
Can't Say					

Rate
FOLLOWER RESPONSE

	To a very large extent	To a large extent	To some extent	To a small extent	Not at all
Positive	4	3	2	1	0
Negative					
Can't Say					

APPENDIX E

SCORING OF PEER RANKINGS

Each cadet was asked to rank the top 5 and bottom 5 members of his company in terms of leadership effectiveness. This resulted in every member of the company having a frequency distribution of how many times he was ranked best, 2nd best, 3rd best, 4th best, 5th best, and worst, 2nd worst, 3rd worst, etc.

For example, in a company with 25 focal cadets, a cadet could have been ranked best once, 2nd best 3 times, 3rd best twice, 4th best not at all, and 5th best once. He also could have been ranked worst, 2nd worst and 3rd worst not at all, but been ranked 4th worst once and 5th worst twice. In this scenario, the cadet was ranked at various points in the top 5 or bottom five by 9 of the 25 cadets in his company. The remaining 16 cadets did not rank him as a member of the top 5 or bottom 5, so for the purposes of analysis it was assumed that they ranked him in exactly the middle of the company, 13th. When a cadet is not ranked in one of the top 5 or bottom 5 spots (such as the above example, where no one ranked the cadet 4th best, or worst, 2nd or 3rd worst) the frequency is zero and is figured into the final peer ranking in that way.

In order to compute the cadet's final peer ranking score, the cadet's top ranking, bottom ranking, and middle ranking must first be computed. His top ranking is computed by multiplying the frequency with which he is ranked best through 5th best by 1 through 5, respectively. Thus, in the case of our example, 1 is multiplied by 1, 3 is multiplied by 2, 2 is multiplied by 3, and 1 is multiplied by 5. These are then added together, and in the case of the example yield 18. This is the cadet's top ranking.

The cadet's bottom ranking is determined by the size of his company. In the case of the example, a ranking of worst would mean the cadet is 25th in a company of 25, 2nd worst means he is 24th, 3rd worst means he is 23rd, 4th worst means he is 22nd, and 5th worst means he is 21st in a company of 25. In the example the cadet was ranked 4th worst once and 5th worst twice, so 1 is multiplied by 22 and 2 is multiplied by 21. These are then added together, and in this case yield 70. This is the cadet's bottom ranking.

The cadet's middle ranking is computed by multiplying the middle point of the company by the number of cadets who did not rank the cadet in either the top 5 or the bottom 5. In the example, the middle point of the company is 13, and the number of cadets who did not rank the cadet in either the top 5 or bottom 5 is 18. Thus, this cadet's middle ranking is 234.

The top ranking, bottom ranking, and middle ranking are added together to get a cadet's raw peer ranking. This means that each cadet gets one peer ranking score which is an additive score based on the number of his peers that ranked him in the top, bottom or middle (unranked). In the example, this total is 322. Two things are important to note because of the way this raw score is computed. First, by this method the top ranked cadets have low scores and the bottom ranked cadets have high scores. Second, because of the fact that this raw score is dependent upon company size, it can be used as a comparison **within** companies, but not **between** companies.

For intuitive ease, and so that peer rankings can be compared between companies, two additional steps are taken. First, the raw peer rankings are converted to Z-scores for each separate company. This standardization procedure allows for the comparison of peer rankings across companies, and this transformation now yields rankings which are all between approximately 2.5 and -2.5. This is because each company's raw score mean has been set to zero, and the Z-scores are actually standard deviation units. The second step is reversing these Z-scores so that a lower score reflects a lower ranking and a higher score reflects a higher ranking. All of the succeeding statistical analyses using the peer rankings are done with these reversed Z-scores.

APPENDIX F

SAMPLE LOG ENTRIES FOR MOST TRANSFORMATIONAL AND LEAST TRANSFORMATIONAL LEADERS

Log Entries About Most Transformational Leaders

He's gone out of his way to answer questions that I needed. He was very patient and didn't just say "I don't have the time." He made the time to discuss my problems with me...I listened to his answers, which were very helpful, so it worked out great. I know that if I ever need to turn to anyone, I can go to him...I was very pleased and happy to have someone there to look after me.

During physical training, he is highly motivational. Competes on obstacle course and does motivational sit-ups, push-ups, and pull-ups with us. Strives for excellence and expects only that. Leads by example...Our company works together to try and outdo him and that's his purpose...I want to be like him next year.

One night at SRC formation, he walked up to me, looked me up and down and said that I had shined up well...I made sure that I looked that good and better before every formation..I felt good and proud to know that I had shined up the proper way, and it encouraged me to do it the same way for every formation.

I saw him one night in town when I was with my parents. He made it a point to come up and say hi, and introduce himself to my parents...I felt that not only did he provide a good example of a well-mannered, fair cadet inside barracks, but portrayed those gentleman-like traits outside of the institute as well.

I was having a bad day and evidently my face was showing it. He stopped me, and seeing that I was somewhat upset, consoled me and cheered me up...I went up to my room in an entirely different mood...I was glad. Most third classmen could flame you, but he showed a good sense of humor and an uncommon level of compassion.

We were playing football and he tackled me pretty hard. After the play was over, he came over and asked me how I was...I was impressed with his concern. Whenever we play football, most 3rd classmen make it a point to hurt rats, but he displayed a different behavior.

He told me I had the potential to be a good cadet. He said I should be the company leader...I was motivated, challenged and full of pride and self-confidence.

I was breaking down, I couldn't take much more of the rat line. He realized I had broken and told me it was time to build me up. He explained what I must do to succeed and how to become a better cadet...I became better at what I was doing and

was able to handle anything put in front of me...I respect him more than anyone here. He always tries to lead and teach by example, not by yelling or condemning you. He always pushes you to do your best.

I was running with my brother rats and had to drop out just before the end. I had a really bad week and was sick from the flu. He took me aside and let me cry for a minute. He told me to hang in there and that any time I felt like leaving V.M.I. to come by his room no matter what the time...I called my family, with whom I had been fighting, and told them I would stay. I also felt a lot better...I saw that even though upper classmen have a role to play, there is a time when they should put that aside and give help where it is needed. He knew when to do that.

My roommate and I messed up in parade one time. He was willing to come up on Sunday night to help us out. He took time out from his own study time to do this...It made me want to improve.

He took me aside during rat challenge and remarked how impressed he was at my motivation. It was a sincere talk, and even though he is a very rough cadre member, he does go out of his way to give positive advice...I felt like I was accomplishing something, instead of always being yelled at. It was the first remarks that made me realize that some people are here to make a better man, instead of just "run you out."

Log Entries About Least Transformational Leaders

He always asks dumb questions like, "Why can't you do anything right?" He never corrects me or my brother rats and never does anything constructive...I tried to avoid him as much as possible. If he makes a comment I usually ignore him...I think he needs to get some manners.

He picked out a certain person and flamed him for almost two straight days...The company wondered if he was trying to discipline us or if he was just trying to get back at us for the trouble he received his rat year. At a company workout one cadet was close to passing out, and even though he witnessed this he proceeded to workout the cadet until he passed out...he was investigated for hazing and was found innocent by his peers...I was disgusted that he would be so cold as to do something like that.

He once exclaimed joyfully when one of my brother rats got a real stiff penalty...It made my brother rat feel down and therefore it made the whole company suffer...It made me extremely angry. I felt the loud, joyful exclamation was uncalled for and cruel.

He targets one brother rat, and only him, for the most part. He is constantly on his back for no reason and often gets personal in his attacks...It makes me mad.

I was running beside him in Rat Challenge formation and our elbows hit once. He made several obscene statements...It made me run further away from him...I think he's a real jerk and should loosen up.

He told one of my brother rats that he would personally see to it that he would leave the institute...my brother rat began to despise him...I feel it is unprofessional to have a personal vendetta against someone under your command, much less to voice this hatred.